

Direct Peritoneal Resuscitation (DPR) Procedure

Objective: The patient receiving direct peritoneal dialysis will achieve significant reduction in time to abdominal closure and number of operations as well as higher rate of primary fascial closure.

Supportive Data: Direct Peritoneal Resuscitation (DPR) is used as a resuscitation strategy in severely injured trauma patients with hemorrhagic shock requiring Damage Control Surgery (DCS). DPR would affect the amount of and timing of resuscitation and/or show benefits in time to abdominal closure and reduction of intra-abdominal complications.

The advent of damage control surgery (DCS) has led to a staged approach to the patient in extremis with intra-abdominal hemorrhage and shock that has undoubtedly saved lives. However, massive resuscitation associated with severe hemorrhagic shock involves fluid administration in volumes far in excess of estimated blood loss because of the shift of fluid from the intravascular to the extravascular space. This massive volume load usually results in substantial tissue edema, which can delay abdominal closure.^{1–3} Acute tissue edema with swelling of the interstitial space secondary to resuscitation is a dominant factor in the inability to close many DCS patients.

There is extensive evidence and experience studying the physiologic effects of direct peritoneal resuscitation (DPR), which consists of suffusing the peritoneal cavity with a hypertonic glucose-based peritoneal dialysis solution. Evidence has demonstrated that DPR can improve microvascular perfusion and reduce tissue injury following hemorrhagic shock, when used in adjunctive treatment to hemorrhagic shock resuscitation was associated with less tissue edema, decreased abdominal complications, as well as decreased time to definitive abdominal closure.

Scope: RN: Critical Care RN's

Contents: DPR procedure
Patient/Family Education
Documentation
Reportable Conditions

Direct Peritoneal Dialysis (DPR) Procedure:

The patient will come from the Operating Room (OR) with an open abdominal surgical site, with a wound-vac and two JP drains in place. The bulbs may or may not be left on the JP drain tubing. If they are not you will likely see that the OR has tied the open ends of the tubing closed with a suture.

Equipment:

- 2 plum-set tubing
- 2.5% DELFLEX solution (at least 10 bags-coordinate with central supply)
- 2 negative pressureclave caps
- 2 plum pumps
- Extra wound vacuum drainage containers (1L size preferred: Contact wound nurses for extra: **YOU WILL NEED AROUND 36 CONTAINERS FOR THE ENTIRE 72 HOUR PROCESS**) unless there is suction on the wall that can be titrated
- 2 Suture set scissors: (for clipping tubing) or 2 pairs of sterile scissors
- CHG prep

Procedure for Set Up:

1. **Perform** hand hygiene and apply Clean Gloves
2. The DEFLEX solution is ordered, it will come in a bag that looks like this:

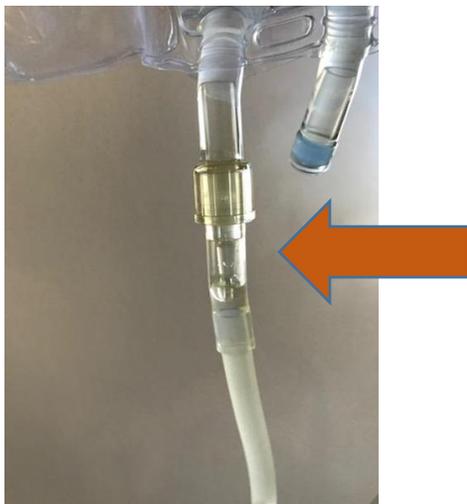


3. The blue port on the right is only for injecting meds for peritoneal dialysis. The port on the left side is to connect peritoneal dialysis tubing- the bag is unable to be spiked with plum tubing.
4. You will notice (in the picture) that the DEFLEX bag has a long tubing connected to the port on the right. This port we will be using to “spike” the plum tubing.



Using the Sterile Scissors from the suture kit **CUT** the tubing where the blue arrow points (approximately 2-3 inches below the port) and discard the end that is cut off.

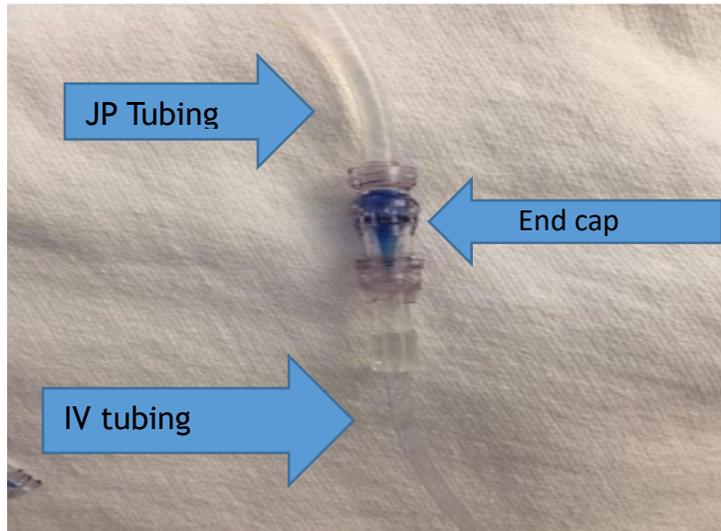
5. Once the tubing is cut, “**spike**” the drip chamber into the tubing where you just cut
6. **Pop** the port. To prime the tubing, the area on the left port where the orange arrow is pointing needs to be “popped” (think like activating a glow stick) in order for the fluid to be able to flow out



7. **Squeeze** the chamber to fill with fluid, **prime** the tube, and place in the plum pump.
8. **Repeat this process for second bag and tubing set up**
9. **Scrub** the area that you are going to cut (see number 10 for location) using CHG prep on the JP drain for 30 seconds and allow to completely dry.
10. **Cut** the end of the JP drain off using the second pair of **sterile** scissors below the bulb (if the bulb is still attached) or below the suture that is tying off the drain
11. **Attach** the negative pressure end cap making sure that the end of the cap attaching to the JP drain is kept sterile.

12. **Scrub** the end cap using CHG prep for 30 seconds using back and forth friction, and allow to completely dry.
13. **Attach** plum tubing to end cap ensuring the tip remains sterile

Will appear as picture below:



14. **NEVER** clamp the wound vac tubing while the infusions are running. If you need to trouble shoot the wound vac, **STOP** the infusions pumps until wound vac is functioning.
15. **Begin** infusions as ordered.
 - a. **Example:** Patients will most often receive an initial bolus of 400ml/hr via each plum pump. (for a total of 800ml bolus), then a maintenance dose of 200ml/hr via each plump pump (for a total of 400ml/hr) for duration of therapy. (approximately 72 hours)
16. When a new dialysate bag is needed to be hung: Follow steps 4-6.
17. **Change** wound vac containers as needed but as stated in number 14: **STOP** the infusions anytime the wound vac is not running/functioning.

Patient/Family Education:

- Explain the procedure and its purpose to the patient/SO

Documentation:

- Assessment and Vital Signs per Unit policy
- When the wound vac container needs to be changed (approximately every 1-2 hours):
 - Document the IV fluid intake in the JP drain intake row and clear pump
 - Document the Output from the wound vac in the I & O
- Any reportable conditions

Reportable Conditions:

- Notify the physician/surgeon **and** wound nurses **STAT**, if there are issues with the wound vac. Must stop IV infusion if wound vac is not functioning appropriately
- New onset frank bloody drainage
- Sudden increase or change in character of pain
- Discrepancies with intake via drain and output via wound vac
- Notify physician/surgeon if there are any changes in patients condition including:
 - Increased abdominal distention different from baseline
 - Increase pain from baseline

References:

Smith, J.W., Garrison, N., Matheson, P.J. Harbrecht, B.G., Bennis, M.V., Franklin, G.A., Miller, K.R., Bozeman, M.C. & Richardson, J.D. (2013). Adjunctive treatment of abdominal catastrophes and sepsis with direct peritoneal resuscitation: Indications for use in acute care surgery. *Trauma Acute Care Surgery*. 77(3), 393-399.

Smith, J.W., Garrison, N., Matheson, P.J. Harbrecht, B.G., Bennis, M.V., Franklin, G.A., Miller, K.R., Bozeman, M.C. & Richardson, J.D. Direct peritoneal resuscitation accelerates primary abdominal wall closure after damage control surgery. *Journal of the American College of Surgeons*. 210(5), 658-667.

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Questions?

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