

OPEN AND CLOSED SURGICAL DRAIN CARE

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Critical Points

1. If the drain is dislodged, call provider immediately. The drain insertion site may be covered loosely with a 2x2 or 4x4 gauze in the meantime.
2. Irrigation of post-surgical tubes requires a provider order.
3. In general, drainage volume may be high immediately following insertion, but is expected to taper and transition from purulent/bloody to drainage that is clearer in color before the drain will be removed.
4. Abrupt cessation of drainage may indicate a blockage of the tubing. Contact provider.
5. Milking or stripping tubing to clear blockage is performed PRN or if ordered by provider.

Procedure

JP/Blake Drain (Figure 1)

Definition – JP/Blake: a closed drain inserted intra-operatively to control drainage of fluid from a surgical site. Consists of a perforated tube connected to a bulb reservoir that maintains continuous suction. (See Figure 1.)

- **Note:** care and maintenance of JP/Blake chest tubes in pediatric cardiac surgery patients is described in the [Chest Tubes \(Neonatal/Pediatric\)](#) procedure.

Open and Closed Surgical Drain Care (*continued*)

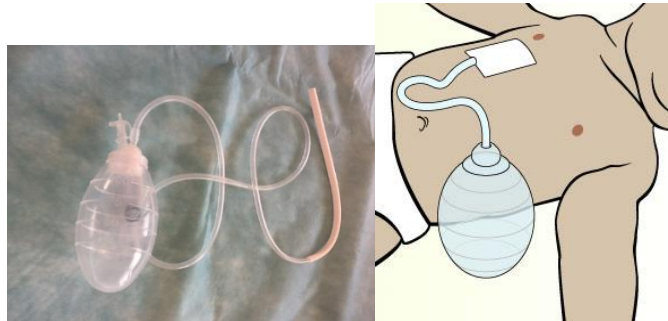


Fig. 1. JP Blake Drain

1. Empty bulb reservoir when $\frac{1}{3}$ to $\frac{1}{2}$ full following these steps:
 - a. Ensure patient and family/caregiver understand procedure.
 - b. Position patient so drain is accessible and patient is comfortable.
 - c. Gather supplies.
 - d. Perform hand hygiene and don PPE.
 - e. Temporarily occlude drain by doubling it back on itself; empty drain by either of the following methods:
 - a. Open port on top of bulb (bulb will inflate) and attach a 60 mL luerlock syringe to the port; withdraw drain contents by inverting bulb and filling syringe or measuring cup.
 - b. Open port, invert bulb, and empty drain contents into a measuring cup.
 - f. Close collection port ensuring all air is drained from bulb.
 - g. After checking volume of drainage removed, dispose of syringe(s) in the biohazardous container or dispose contents of cup into toilet or biohazard bin.
 - h. Secure JP drainage system with a stress loop.
2. Change dressing when loose or saturated with drainage as follows:
 - a. Ensure patient and family/caregiver understand procedure.
 - b. Position patient so drain is accessible and patient is comfortable.
 - c. Gather supplies.
 - d. Perform hand hygiene.
 - e. Carefully remove split 2X2 without tugging on drain. Remove in layers if more than one dressing.
 - f. Assess exit site for redness, warmth, induration, edema, rash, or swelling and report if present.
 - g. Cleanse skin with saline wipe.
 - h. Apply Cavilon 3M No-Sting barrier film if there is significant drainage, and skin is at risk for breakdown. Allow to dry completely. Apply no more frequently than every 24 hours.
 - i. Replace split 2x2 drain sponge and secure to skin with tape or Tegaderm.
3. Stripping JP drain tubing: Performed to assist in maintaining patency and prevent clot formation.
 - a. Anchor the top of the drain tubing (near where it leaves the skin) with one hand so that it does not pull on the skin to prevent dislodgement.
 - b. Firmly pinch the tubing with your other hand using your thumb and first finger.
 - c. Slowly, but firmly, pull your thumb and first finger down the tubing.

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- d. You may stop and start as you move the clot through the tubing into the drain.
- e. **STOP** if you are pulling on the tubing and it hurts, if the length of tubing changes, or comes out of the skin.

Penrose Drain (Figure 2)

Definition – Penrose: an open tubular gravity drain placed intra-operatively; used to drain air or fluid from an abscess cavity, surgical incision, or peritoneum. May have one insertion site or both an insertion and an exit site and may be sutured in place.

- A Penrose drain has no bulb or chamber to empty and **cannot** be milked/stripped.
1. Change dressing when loose or saturated with drainage as follows:
 - a. Ensure patient and family/caregiver understand procedure.
 - b. Position patient so drain is accessible and patient is comfortable.
 - c. Gather supplies.
 - d. Perform hand hygiene and don PPE.
 - e. Carefully remove 2x2 or 4x4 gauze without tugging on drain. Remove in layers if more than one dressing.
 - f. Assess exit site for redness, warmth, induration, edema, rash or swelling and report if present.
 - g. Cleanse skin with saline wipe.
 - h. Apply Cavilon 3M No-Sting barrier film if there is significant drainage, and skin is at risk for breakdown. Allow to dry completely. Apply no more frequently than every 24 hours.
 - i. Replace gauze and secure to skin with tape or Tegaderm.



Fig. 2. Penrose Drain

TLS (tiny little sucker) Drain (Figure 3)

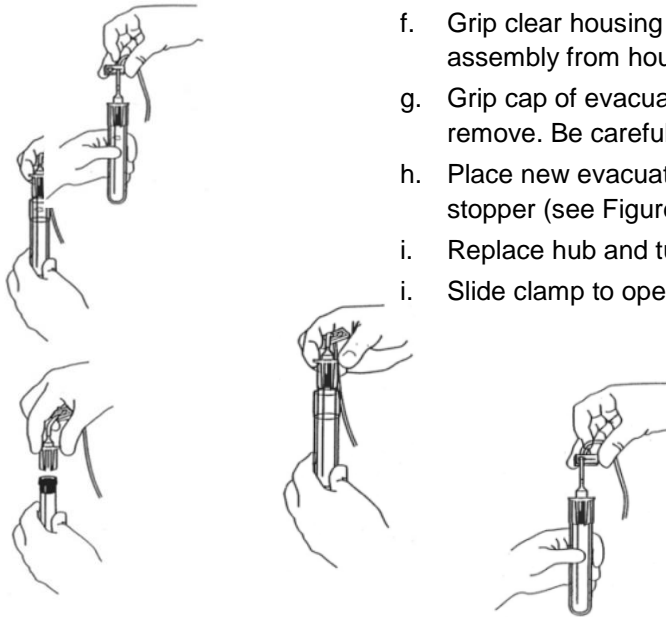
Definition – TLS: a small tube attached to a vacuum cylinder that acts as a reservoir. Placed intra-operatively to control drainage of fluid from a surgical site.

1. Replace evacuation tube when either $\frac{3}{4}$ full or every 2 hours if ordered by primary team. Use the following steps:
 - a. Ensure patient and family/caregiver understand procedure.
 - b. Position patient so drain is accessible and patient is comfortable.
 - c. Gather supplies.
 - d. Perform hand hygiene and don PPE.



Fig. 3. TLS Drain

Open and Closed Surgical Drain Care (*continued*)



- e. Slide clamp to closed position over drainage tube.
- f. Grip clear housing and white hub and remove evacuation tube and hub assembly from housing (see Figure 4, part 1).
- g. Grip cap of evacuated tube through slots, then grip white hub and pull gently to remove. Be careful of needle (see Figure 4, part 2).
- h. Place new evacuation tube on white hub by pushing needle through center of stopper (see Figure 4, part 3).
- i. Replace hub and tube assembly into housing (see Figure 4, part 4).
- i. Slide clamp to open position (see Figure 4, part 5).

Fig. 4: Replacing TLS Evacuation Tube

2. Change dressing when loose or saturated with drainage as follows:
 - a. Ensure patient and family/caregiver understand procedure.
 - b. Position patient so drain is accessible and patient is comfortable.
 - c. Gather supplies.
 - d. Perform hand hygiene and don PPE.
 - e. Carefully remove 2x2 or 4x4 gauze without tugging on drain. Remove in layers if more than one dressing.
 - f. Assess exit site for redness, warmth, induration, edema, rash or swelling and report if present.
 - g. Cleanse skin with saline wipe.
 - h. Apply Cavilon 3M No-Sting barrier film if there is significant drainage, and skin is at risk for breakdown. Allow to dry completely. Apply no more frequently than every 24 hours.
 - i. Replace gauze and secure to skin with tape or Tegaderm

T-Tube Drain (Figure 5)

Definition – T-Tube: a closed surgical drain, inserted into a bile duct, to temporarily drain bile by gravity into a drainage bag.

1. Empty bile drainage bag when $\frac{1}{3}$ to $\frac{1}{2}$ full.
 - a. Ensure patient and family/caregiver understand procedure.
 - b. Position patient so drain is accessible and patient is comfortable.
 - c. Gather supplies.
 - d. Perform hand hygiene and don PPE.



Fig. 5. T-Tube Drain

Open and Closed Surgical Drain Care (*continued*)

- e. Open cap at bottom of bag.
 - f. Drain into graduated cylinder or measuring cup.
 - g. Close cap and secure bile bag with a stress loop.
2. Change dressing when loose or saturated with drainage as follows:
 - a. Ensure patient and family/caregiver understand procedure
 - b. Position patient so drain is accessible and patient is comfortable.
 - c. Gather supplies
 - d. Perform hand hygiene
 - e. Carefully remove split 2X2 without tugging on drain. Remove in layers if more than one dressing.
 - f. Assess exit site for redness, warmth, induration, edema, rash or swelling and report if present.
 - g. Cleanse skin with saline wipe
 - h. Apply Cavilon 3M No-Sting barrier film if there is significant drainage, and skin is at risk for breakdown. Allow to dry completely. Apply no more frequently than every 24 hours.
 - i. Replace split 2x2 drain sponge and secure to skin with tape or Tegaderm.

Hemovac Drain (Figure 6)

Definition – Hemovac: a closed drain inserted intra-operatively to control drainage of fluid from a surgical site. Connected to a bulb reservoir that maintains continuous suction.

1. Empty hemovac when $\frac{1}{3}$ to $\frac{1}{2}$ full.
 - a. Ensure patient and family/caregiver understand procedure.
 - b. Position patient so drain is accessible and patient is comfortable.
 - c. Gather supplies.
 - d. Perform hand hygiene and don PPE.
 - e. Open cap on drainage reservoir.
 - f. Turn upside down and drain into graduated cylinder or measuring cup.
 - g. Place reservoir on flat surface and press down to expel air and flatten.
 - h. Replace plug while holding container flat. The reservoir must remain compressed to maintain suction.
2. Change dressing when loose or saturated with drainage as follows:
 - a. Ensure patient and family/caregiver understand procedure.
 - b. Position patient so drain is accessible and patient is comfortable.
 - c. Gather supplies.
 - d. Perform hand hygiene and done PPE.
 - e. Carefully remove split 2X2 without tugging on drain. Remove in layers if more than one dressing.
 - f. Assess exit site for redness, warmth, induration, edema, rash or swelling and report if present.
 - g. Cleanse skin with saline wipe



Fig. 6. Hemovac

Open and Closed Surgical Drain Care (*continued*)

- h. Apply Cavilon 3M No-Sting barrier film if there is significant drainage, and skin is at risk for breakdown. Allow to dry completely. Apply no more frequently than every 24 hours.
- i. Replace split 2x2 drain sponge and secure to skin with tape or Tegaderm.

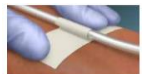
Multipurpose Pigtail Drain

Definition – Pigtail: a gravity drain inserted intra-operatively or in interventional radiology, to control drainage of fluid. Connected to a drainage bag that may be opened at the bottom to empty.

1. Empty drainage bag when $\frac{1}{3}$ to $\frac{1}{2}$ full.
 - a. Ensure patient and family/caregiver understand procedure.
 - b. Position patient so drain is accessible and patient is comfortable.
 - c. Gather supplies.
 - d. Perform hand hygiene.
 - e. Empty drainage bag into graduated cylinder or measuring cup.
2. Change dressing when loose or saturated with drainage as follows:
 - a. Ensure patient and family/caregiver understand procedure.
 - b. Position patient so drain is accessible and patient is comfortable.
 - c. Gather supplies.
 - d. Perform hand hygiene and PPE.
 - e. Carefully remove split 2X2 without tugging on drain. Remove in layers if more than one dressing.
 - f. Assess exit site for redness, warmth, induration, edema, rash or swelling.
 - g. Cleanse skin with saline wipe.
 - h. Apply Cavilon 3M No-Sting barrier film if there is significant drainage, and skin is at risk for breakdown. Allow to dry completely. Apply no more frequently than every 24 hours.
 - i. Replace split 2x2 drain sponge and secure to skin with tape or Tegaderm.

Monitoring and Management

1. Verify all connections and joints are secure every shift.
2. Ensure no dependent loops or kinked tubing present.
3. Secure tubing to body using the tape tent/Omega technique to provide “slack” and off-load pressure from insertion site. Encircle tubing with tape, where the tape meets, pinch the two adhesive sides together. Secure the remainder of tape to skin.
3. Assess site for localized pain, erythema, drainage every shift.
4. Assess type and amount of drainage and appearance of skin at insertion site every shift. If there is leakage, inform the provider and contact the Wound Care nurse for assistance.
5. Change dressing (when present) as needed when soiled or saturated with drainage.
4. Assess for changes in drain volume and drainage type (i.e. bloody, serous, serosanguinous, milky, purulent).
 - a. Notify provider of change from expected type of drainage, and sudden increase or decrease in volume..
5. Irrigation is performed to maintain patency when ordered.
 - a. Flush drain per provider order. Provider order will include:
 - i. Drain location and laterality, if appropriate
 - ii. Flush volume (typical volume should not exceed 10ml)
 - iii. Flush frequency



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- b. Verify drain placement.
 - i. Discuss with provider if concern about drain placement and plan for verification.
- c. Flushing:
 - i. Gather supplies:
 - 1. Ordered solution (typically Sterile NS)
 - 2. 10mL syringe
 - 3. Stopcock (PMM# 180951)
 - ii. Using aseptic technique, flush drain with ordered solution; do not attempt to draw flush volume back unless specified in provider order.
 - iii. If resistance is met or if solution is leaking out of insertion site when flushing, stop flushing and notify provider.

Documentation

1. Type and location of drain(s).
2. Appearance of skin around insertion site during each dressing change.
3. Details of dressing change.
4. Appearance and amount of drainage from drain reservoir or insertion site.
5. Irrigation volume and type of solution (Figure 7).
 - a. To determine drainage output when drain has been irrigated, subtract irrigation volume from total output (e.g., fluid in drain reservoir is 60mL, irrigation volume is 10mL, drainage output is 50mL).

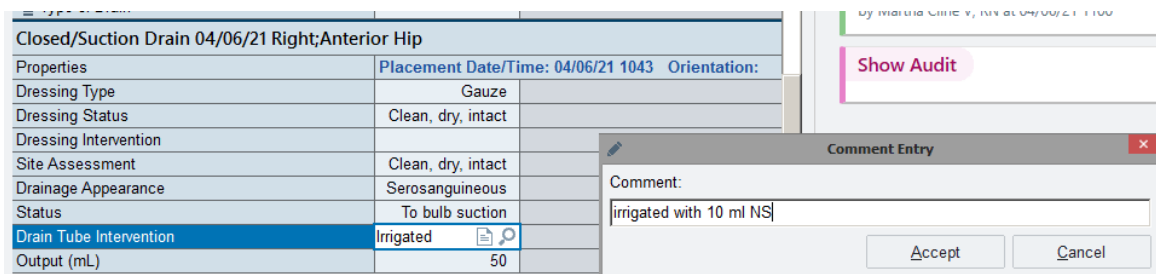


Fig. 7. Irrigation documentation

Open and Closed Surgical Drain Care (*continued*)

Troubleshooting

Problem	Suspected issue	Action
Increase, decrease or change in character of drainage	<ul style="list-style-type: none"> Clogged with debris or blood clots 	<ul style="list-style-type: none"> Notify provider
Change in appearance of skin around insertion site	<ul style="list-style-type: none"> Infection; skin irritation from drainage (Penrose) or dressing 	<ul style="list-style-type: none"> Notify provider
Drainage from insertion site	<ul style="list-style-type: none"> Dislodged or misplaced tube; tube clogged with debris or clots 	<ul style="list-style-type: none"> Notify provider
Drain becomes dislodged		<ul style="list-style-type: none"> Call provider immediately
Compromised integrity of sutures securing device to skin	<ul style="list-style-type: none"> Sutures have come loose from skin 	<ul style="list-style-type: none"> Notify provider

References

Level of Evidence (FAME*)	Level*	Reference
Level of Evidence (FAME*)	E4	Browne, N.T.; Flanigan, L.M.; McComiskey, C.A. Pieper, P. (2013). <i>Nursing Care of the Pediatric Surgical Patient</i> (3 rd Edition). (pp.111-115). Burlington, MA: Jones & Bartlett.
	E4	Durai, R., & Ng, P.C. (2010). Surgical vacuum drains: Types, uses and complications. <i>AORN Journal</i> , 91(2), 266-274. doi:10.1016/j.aorn.2009.09.024
	E4	Orth, K. (2018). Preventing Surgical Site Infections Related to Abdominal Drains in the Intensive Care Unit, <i>Critical Care Nurse</i> , 38(4), 20-26. doi:10.4037/ccn2018254
	E4	Verger, J.T., & Lebet, R.M. (2008). <i>AACN procedure manual for pediatric acute and critical care</i> (pp. 685-694). St Louis: Saunders

* FAME Scale details: See nursing policy, [Procedure, & Competency Development, Review, & Approval](#)

Open and Closed Surgical Drain Care (*continued*)

Procedure History

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