PR35: Bladder Pressure Monitoring

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Applicable To

CCP only

Introduction

Bladder pressure monitoring is used to identify an often under-recognized and under-treated cause of obstructive shock related to intra-abdominal hypertension. Intra-abdominal pressure (IAP) is graded by:

- Grade I: 12-15 mmHg
- Grade II: 16-20 mmHg
- Grade III: 21-25 mmHg
- Grade IV: > 25 mmHg

Abdominal compartment syndrome is a sustained IAP of more than 20 mmHg and is associated with new organ dysfunction. Consideration needs to be paid to a primary or secondary cause so that appropriate treatment can be initiated. Reducing the obstructive shock state allows for a safer conveyance.

Indications

- Suspected obstructive shock resulting from either a primary or secondary source of abdominal hypertension that has led to abdominal compartment syndrome

Contraindications

- Any patient unable to tolerate a head-of-bed < 20°

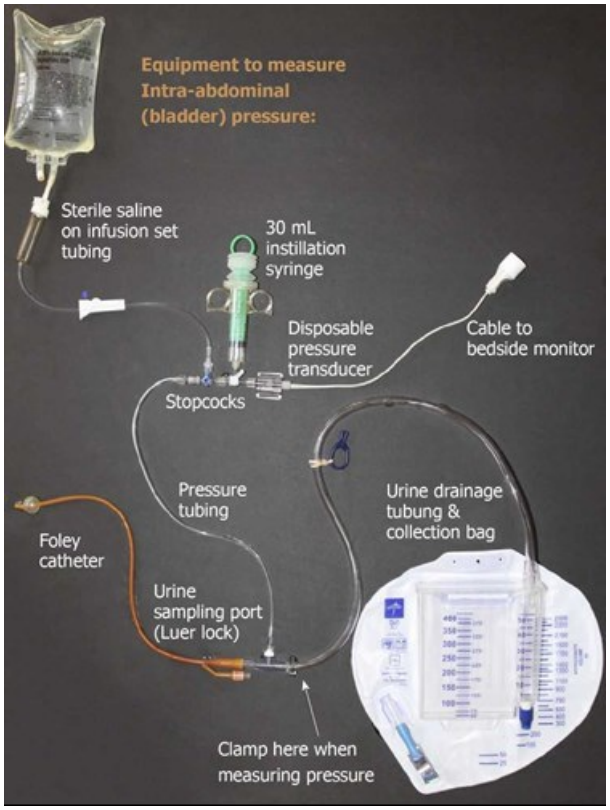
Caution: a blocked or kinked Foley will give falsely high pressures

Caution: PEEP will cause falsely high pressures

Procedure

1. Perform hand hygiene.
2. Patient should be placed in the supine position for measurement. The head of the bed needs to be < 20°. If this is not clinically feasible, it is important to recognize that elevation of the head of the bed will result in a higher IAP.
3. Document position and ensure all subsequent readings are taken in the same position.
4. Prime the pressure monitoring tubing.
5. Connect the tubing to the sampling port on the Foley tubing using aseptic technique.
6. Connect the transducer cable to the monitor.
7. Level at the cross section of the mid-axillary line and the iliac crest; zero the transducer.
8. Change the scale on the monitor to 30 mmHg.
9. Clamp the drainage tube to the urine bag below or distal to the sampling port.
10. Using the port on the tubing and the three-way stopcock, fill the bladder with 1mL/kg (minimum of 3 mL and maximum 25 ml) of 0.9% sterile sodium chloride using the syringe. The volume of fluid in the bladder should be constant for each subsequent measurement.
11. Once instilled, close the stopcock of the syringe and wait 60 seconds.
12. Obtain the mean pressure reading upon end expiration.
13. The abdominal pressure should produce fluctuations in the waveform.

14. Once finished with the reading, re-open the clamp.



Notes

- False positives can occur with patient position, RASS, and detrusor muscle contraction.
- Some commercial products connect directly in line with the Foley tubing.

References

1. Gestring M. Abdominal compartment syndrome in adults. 2020. [Link]
2. Raccanello J., Morris K. Intra-abdominal pressure monitoring. 2020. [Link]
3. Morgan B. Information and procedure: intra-abdominal pressure monitoring. [Link]
4. Rogers WK, Garcia L. Intraabdominal hypertension, abdominal compartment syndrome, and the open abdomen. 2018. [Link]