

hTEE-guided management of appendectomy patient in respiratory distress (Even “routine” cases can benefit from hTEE)

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The patient

A 65 year old male with a past medical history consisting of hypertension and coronary artery disease presented to the emergency room with the chief complaint of abdominal pain. A work up including a CT scan of the abdomen and pelvis revealed appendicitis contained in a large flank incisional hernia from a prior nephrectomy.

History

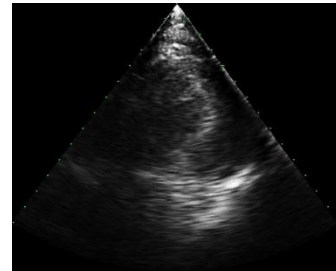
The patient underwent a successful laparoscopic appendectomy but demonstrated ST segment elevations on EKG in the recovery room. The patient was managed with supportive measures and observed on the floor with telemetry. On post-operative day 2, the patient demonstrated only a mild elevation of his cardiac enzymes and troponin values but developed respiratory distress and oliguria with a mild rise in his creatinine. The patient was intubated and transferred to the ICU.

Initial ICU assessment

The patient appeared volume overloaded clinically and on plane film radiograph. An hTEE probe was placed and his volume status was assessed.

Initial hTEE exam

An initial hTEE exam revealed a volume-depleted, volume responsive patient, with hyperdynamic cardiac wall motion.



Transgastric Short Axis

LV filling and function: LV volume depleted and extremely collapsible (shown shortly before end systole)



Superior Vena Cava

Fluid responsiveness: SVC was collapsed and varied with respirations (shown near maximum inspiration)

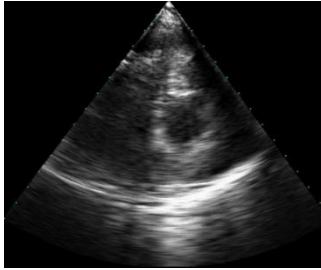


Midesophageal 4CH

Bi-ventricular filling and function: RV collapsible and both ventricles demonstrated hyperdynamic wall motion.

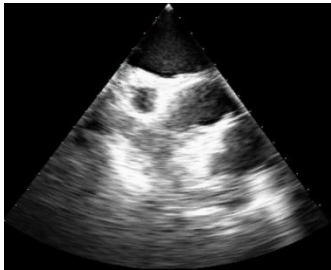
Aggressive volume replacement was initiated and the patient's hemodynamics improved.

Follow-up hTEE exam and resolution



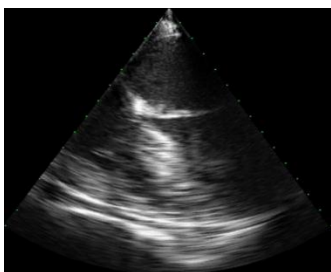
Transgastric Short Axis

LV Filling and Function improves with better LVEDA



Superior Vena Cava

Size and collapsibility improved



Midesophageal 4 CH

Bi-ventricular filling improves

A second hTEE exam four hours later revealed improvement in the patient's LV function and filling (transgastric view, left) and less respiratory variability in his SVC (SVC view, center) and improved filling and slowing of both ventricles (mid-esophageal view, right).

The patient never demonstrated any further rise in his cardiac enzymes and began producing adequate urine volume per hour.

Conclusion

hTEE can prove beneficial in managing even relatively "routine" cases. Dr. Sandeep Krishnan (NYU, now at Michigan) and NYU colleagues had a similar experience in a twenty patient study presented at the 2013 meeting of the Society of Critical Care Medicine: "In this population, LVEDA was very often low despite elevated CVP and PADP, indicating decreased intravascular volume. The data suggested that significant additional fluid could be administered to patients who would have been presumed to have adequate intravascular volume based on CVP and PADP." [1]

Reference

1. Krishnan S, Ngai J, Schlame M, Rabinowitz L. Comparison of hTEE and Swan-Ganz Catheter for the Evaluation of Volume Status in Patients Post AVR. Critical Care Medicine 2012; 40 Suppl 1, Abstract 276.