History
2 week old infant with recently repaired diaphragmatic hernia and increasing bilirubin.

Diagnosis
Inspissated Bile, Comet-Tail Artifact

Discussion
Comet-tail and ring-down artifact both appear as a series of parallel bands radiating from their source. Although similar in appearance, these artifacts have a different cause. Ring-down is a common US artifact associated with transient gas collections. It appears as a series of bands or a solid streak radiating from the gas collections. This artifact originates at the center of a cluster of four aim bubbles (bubble tetrahedron). Entrapped between the bubbles is a horn-shaped fluid collection that returns a continuous sound wave when struck by an ultrasound pulse, analogous to striking a bell with a hammer. The mechanism producing the ring-down artifact is likely resonance. The comet-tail artifact has a similar appearance to that of the ring-down artifact and has been associated with foreign bodies, particularly metallic objects, and calcifications. The comet-tail appearance is caused by reverberation of the ultrasound pulse within the material with the parallel bands closely spaced in the image because of the high acoustic velocity of the material. Biliary stasis and inspissation increase formation of cholesterol crystals. This is commonly seen in the newborn period, especially in the setting of co-morbid conditions and recent surgery. Also as transducer frequency increases the more the cholesterol crystal interfaces reflect the sound beam. This results in more conspicuous comet-tail artifact.

Findings
US-Numerous intraluminal hyperechoic foci with comet-tail artifact.

Reference

Contributor
Linda Woolpert, RRT RDMS
Disclaimer
This teaching site is partially funded by an educational grant from GE Healthcare and Advanced Radiology Services, PC. The material on this site is independently controlled by Advanced Radiology Services, PC, and GE Healthcare and Spectrum Health have no influence over the content of this site.

Content Download Agreement
The cases and images on this website are owned by Spectrum Health. Permission is granted (for nonprofit educational purposes) to download and print materials to distribute for the purpose of facilitating the education of health professionals. The authors retain all rights to the material and users are requested to acknowledge the source of the material.

Site Disclaimer
This site is developed to reach healthcare professionals and medical students. Nothing this site should be considered medical advice. Only your own doctor can help you make decisions about your medical care. If you have a specific medical question or are seeking medical care, please contact your physician.

The information in this website is provided for general medical education purposes only and is not meant to substitute for the independent medical judgment of a physician relative to diagnostic and treatment options of a specific medical condition.

The viewpoints expressed in these cases are those of the authors. They do not represent an endorsement. In no event will Advanced Radiology Associates, PC, Spectrum Health Hospitals (Helen DeVos Children's Hospital) or GE Healthcare be liable for any decision made or action taken in reliance upon the information provided through this website.