

Canon

画論

29th

The Best Image

Best Image Awards Compilation

Ultrasound Category

CONTENTS

Vascular

[Grand Prize Award]

Idiopathic dissection of the celiac artery

Toho University Omori Medical Center, Tokyo, Japan Yuta Sasaki —————  3

Breast / Thyroid Gland / Superficial Tissues

[Outstanding Award]

Squamous cell carcinoma

The University of Tokyo Hospital, Tokyo, Japan Tamaki Kobayashi —————  5

Abdomen

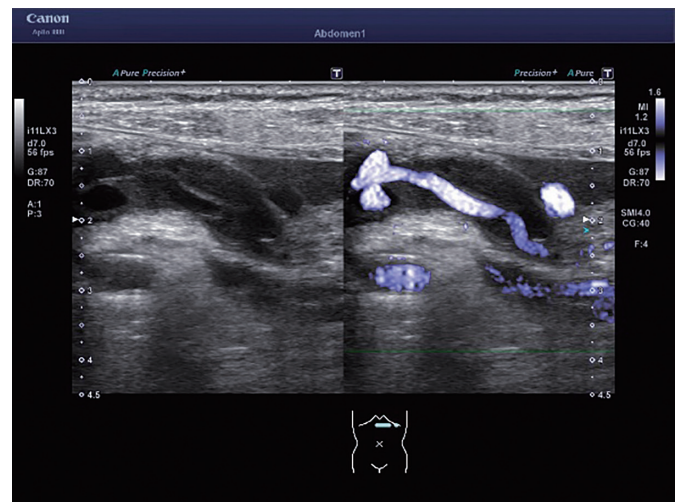
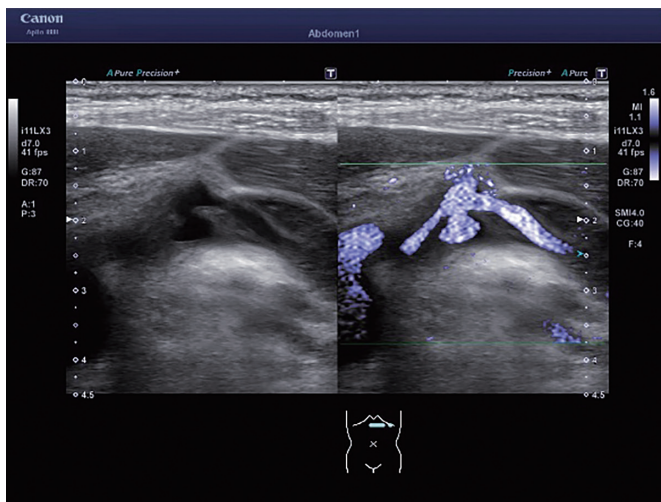
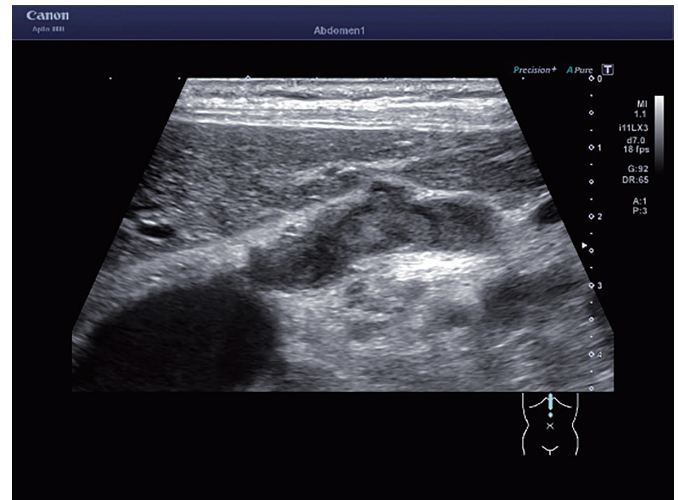
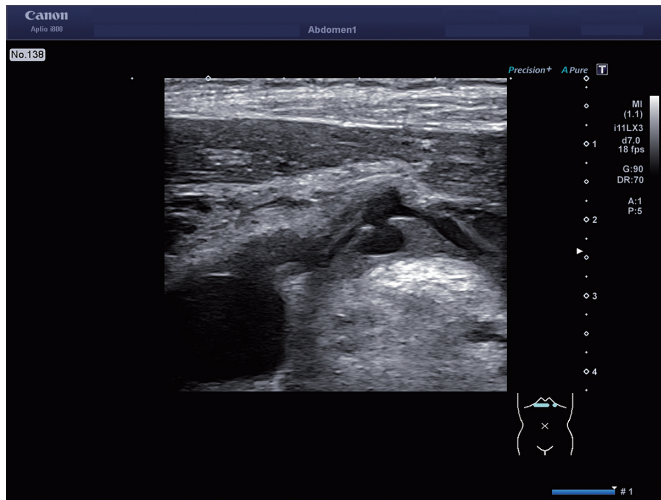
[Grand Prize Award]

Varix in the small intestine)

Fukushima Medical University Hospital, Fukushima, Japan Mitsuko Matsuda ——— 6



Videos related to these images can be viewed by scanning the entire page using our medicalAR app.



a	b
c	d

Idiopathic dissection of the celiac artery

Toho University Omori Medical Center, Tokyo, Japan
Yuta Sasaki

System used: Aplio i800

Reason for examination: The patient had been suffering from upper abdominal pain and back pain for 2 weeks before visiting a local hospital. Endoscopy was performed, and the findings suggested a diagnosis of atrophic gastritis. She was given a prescription for a proton pump inhibitor and arrangements were made for outpatient follow-up. However, because the patient's pain failed to improve after 1 week of treatment and because gastritis is not typically associated with back pain, a contrast CT examination was performed. The findings were suggestive of splenic artery vasculitis. She was referred to the Department of Cardiovascular Surgery for detailed evaluation of suspected splenic artery vasculitis associated with back pain. Abdominal ultrasonography was requested.

Image findings: The celiac artery was found to be dilated, with an irregular solid echo pattern observed along the vessel wall from its origin to the splenic artery. Based on these findings, dissection was suspected. The true lumen of the celiac artery was narrowed from its origin due to

compression and displacement by the false lumen, and the pulsed-wave Doppler waveform of the splenic artery showed a post-stenotic pattern. The false lumen was filled with thrombus consisting of both isoechoic and hypoechoic components. The thrombus was judged to be relatively new because it was seen to move in response to arterial pulsation. In addition, an ulcer-like depression was noted in the false lumen and blood flow signals were observed in SMI mode.

Clinical comments: Ultrasonography was very useful for identifying the lesion responsible for this patient's upper abdominal pain, and real-time imaging allowed us to immediately report the presence or absence of complications, such as rupture or organ ischemia, to the attending physician. In addition, although vasculitis was suspected based on the findings of a contrast CT examination ordered by the primary physician, ultrasonography allowed us to identify the lesion (dissection), to assess the morphology and hemodynamics of the true and false lumens, and to evaluate the characteristics of the thrombus in detail. This information, which could not be obtained by other modalities, was extremely useful for both diagnosis and follow-up.

Technical comments: Since the courses of the blood vessels were relatively superficial, a high-frequency linear transducer could be used to acquire higher resolution images. ApliPure and Precision Imaging could also be employed to minimize artifacts and to improve visualization

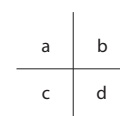
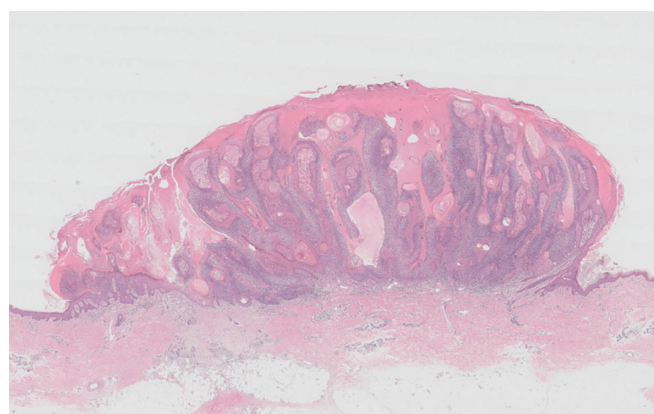
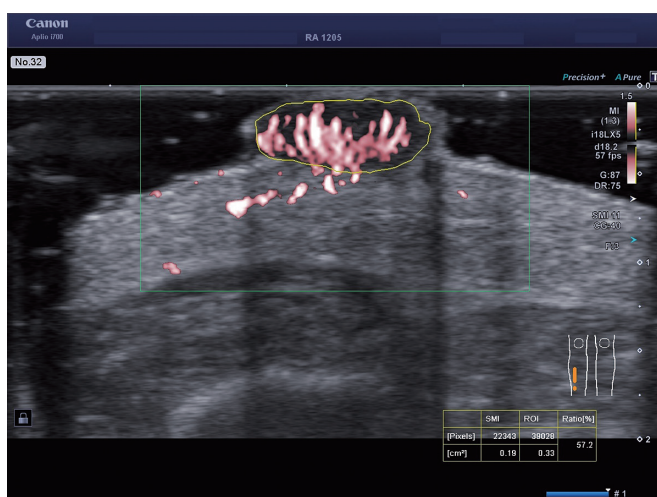
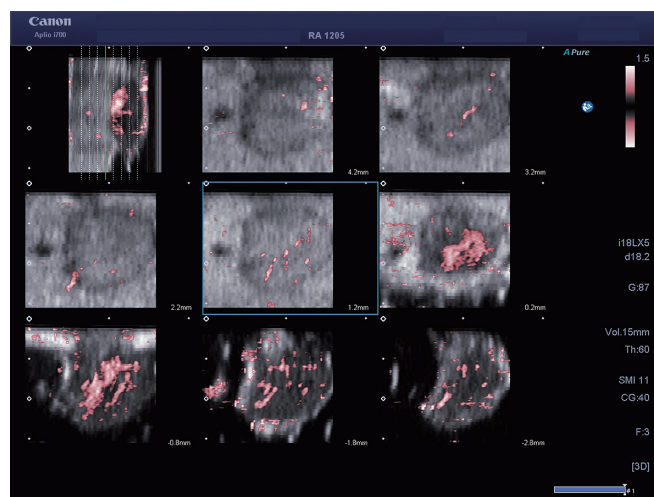
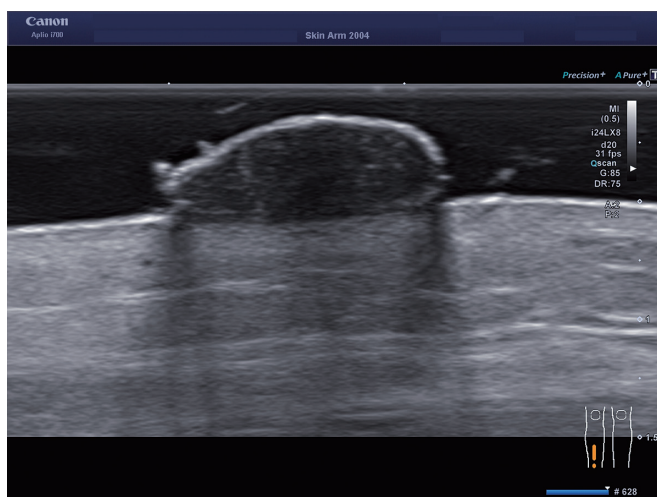
of the lesion. The Superb Micro-vascular Imaging (SMI) function was also extremely useful for assessing blood flow in the dissection and for visualizing low-velocity blood flow in the depression, allowing both their extent and depth to be accurately determined while maintaining a high frame rate.

Comments on images: (a) Long-axis image of the celiac artery. An irregular solid echo pattern along the vessel wall is observed, suggestive of dissection. The solid parts are considered to be thrombus in the false lumen. An ulcer-like depression is also noted in the false lumen. (b) Long-axis image of the celiac artery. The region identified as thrombus in the false lumen is enlarged for more detailed evaluation. The thrombus, which consists of a mixture of isoechoic and hypoechoic components, moves in response to arterial pulsation. These findings indicate relatively new thrombus. (c) Long-axis images of the celiac artery. Hemodynamics can be observed using the SMI function. No obvious blood flow signals are seen in the false lumen, which is filled with thrombus. However, blood flow signals are seen in the depression, which measures 6 mm long and 4 mm deep. (d) Long-axis images of the splenic artery from the celiac artery. The SMI images show a continuous dissection from the origin of the celiac artery to the splenic artery. No obvious blood flow signals are observed in the false lumen, and occlusion by thrombus is noted, except in the depression.

Sex	Age
Female	70+ years



Videos related to these images can be viewed by scanning the entire page using our medicalAR app.



Squamous cell carcinoma

The University of Tokyo Hospital, Tokyo, Japan
Tamaki Kobayashi

System used: Aplio i700

Reason for examination: A reddish nodule was observed on the patient's right lower leg. Because the nodule was increasing in size, ultrasonography was performed to evaluate its characteristics, including internal echogenicity, thickness, blood flow, and elasticity.

Image findings: The nodule was a hypoechoic mass measuring 11x10 mm with a thickness of 4 mm. Ultrasonography showed no evidence of invasion into subcutaneous tissues. Strain elastography demonstrated decreased strain. In SMI mode, strong blood flow signals were observed radiating from the center of the base of the mass out to its edges. Axial images of the nodule obtained using

the SMI and Smart 3D functions also showed blood flowing in a radial pattern from the base of the mass.

Clinical comments: The nodule was resected and sent for histopathological examination, which returned a diagnosis of squamous cell carcinoma. In terms of TNM classification, the nodule was judged to be pTis or pT1, with no vascular or neural invasion. It was determined that the nodule had been completely resected. Assessment of the characteristics of the nodule by skin echography provided very useful clinical information.

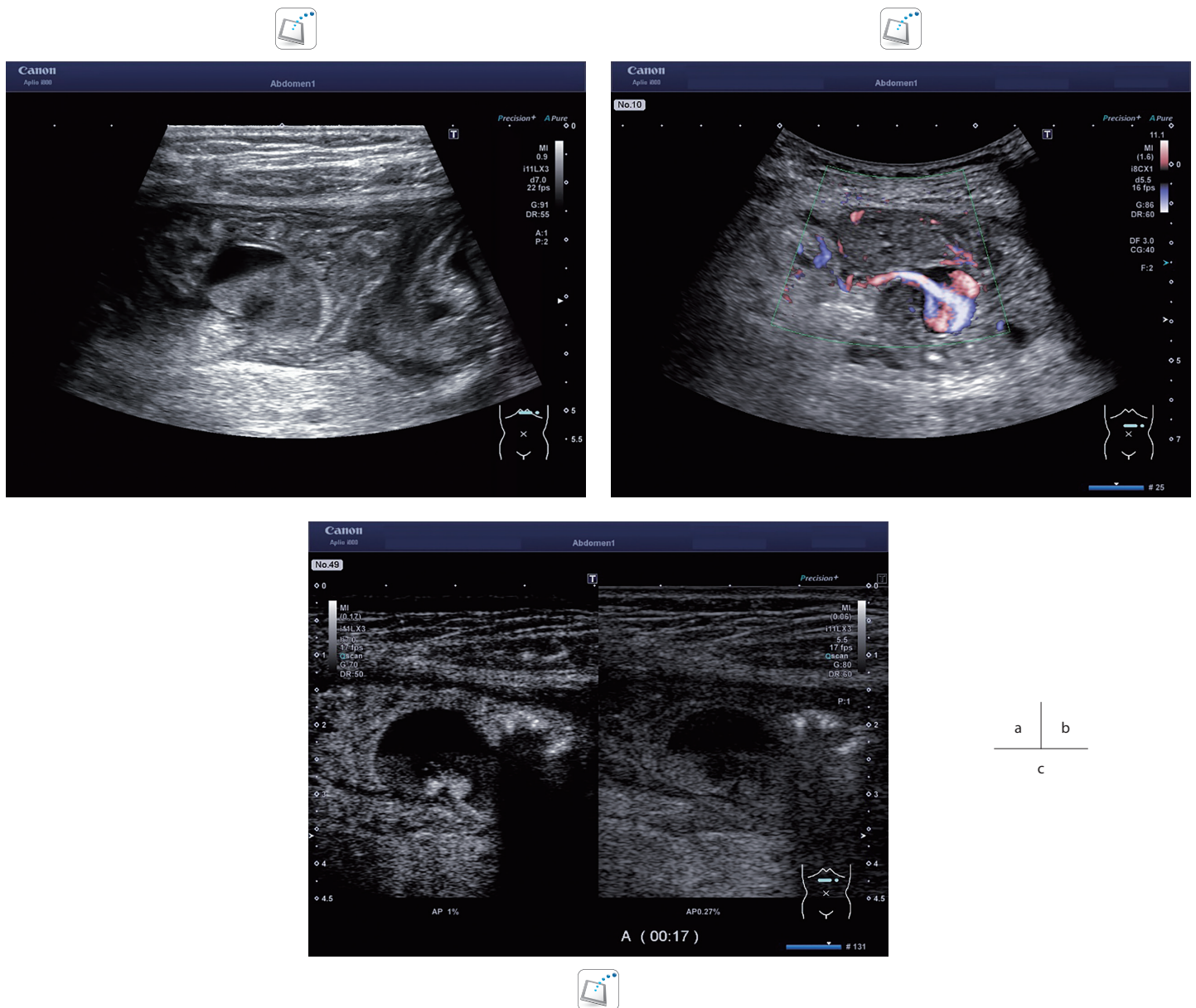
Technical comments: Because the nodule was elevated, thick ultrasound gel was applied to cover the entire mass and examination was performed without exerting downward pressure so as to minimize any effects on the detected blood flow signals. When the SMI and Smart 3D functions are used in combination, it is possible to switch between B-mode and blood-flow mode when generating 3D images. In addition, axial images can be reconstructed to generate images similar to those obtained by CT scanning. This may be useful for evaluating the hemodynamics in such lesions, providing valuable information for differ-

ential diagnosis.

Comments on images: (a) The nodule is visualized as a hypoechoic mass with relatively heterogeneous internal echogenicity and scattered slightly hyperechoic areas. The margins between the mass and the dermis are somewhat unclear, but the subcutaneous tissues can be clearly observed. (b) In Smart 3D with reconstruction performed using a slice width of 1 mm, the hemodynamics in the mass can be clearly visualized, similar to CT images. The slice width can be adjusted as desired, permitting extremely precise blood flow analysis. (c) The SMI signal ratio (vascular index) of the mass is 57% in the ROI traced to include the entire mass. Blood flow is observed in more than half of the mass, indicating that it is a highly vascularized tumor. (d) The histopathological specimen (HE staining) shows tumor cells with round nuclei containing coarse chromatin and clear vesicles proliferating in sheets and forming an elevated lesion measuring 12x11x3.5 mm. Numerous keratin pearls are also observed.

Sex	Age
Female	50-59 years





Varix in the small intestine

Fukushima Medical University Hospital, Fukushima, Japan
Mitsuko Matsuda

System used: Aplio i800

Reason for examination: A follow-up abdominal CT examination in this patient with decompensated cirrhosis revealed a round shadow near the small intestine. It was suspected to be an aneurysm of the peripheral superior mesenteric artery. However, CT examination could not determine whether the mass was arterial or venous, so ultrasonography was requested for detailed evaluation.

Image findings: A protuberant mass measuring 22×14 mm was seen in the small intestine. In B-mode images, areas of stagnant blood flow in the mass were depicted as spot echoes. A fluid level and blood flow were observed, indicating the inflow and outflow tracts. In Advanced Dy-

namic Flow (ADF) mode, intermittent strong inflow of color signals was noted. In Sonazoid contrast imaging, steady flow of contrast agent into the mass was observed slightly later than in the surrounding arteries. The inflow and outflow tracts were clearly depicted by the contrast agent, and it was found that there were actually two inflow tracts. **Clinical comments:** Varices of the small intestine are relatively rare and are usually diagnosed by angiography. In this patient, CT examination was unable to determine whether the mass was an aneurysm or a varix, but ultrasonography clearly demonstrated that it was a varix, allowing the diagnosis to be established without the need to perform additional invasive examinations. Because both the inflow and outflow tracts of the varix were small, it was considered likely that it formed following the treatment of esophageal varices rather than being a direct complication of portal hypertension. The blood inflow velocity was relatively low and deformation of the mass was observed. The risk of rupture was therefore judged to be low, and it was decided to manage the patient conservatively.

Technical comments: Detailed ultrasound examination of

the intestinal tract in the area identified by abdominal CT revealed a fluctuating varix surrounded by long peristaltic folds. ADF mode was useful for depicting the intermittent strong blood flow signals entering the varix. A high-frequency linear transducer was used to visualize stagnant blood cells in B-mode and also to observe low-velocity outflow. The combined use of Sonazoid contrast agent permitted blood flow to be clearly depicted and the complex inflow and outflow tracts to be observed in detail.

Comments on images: (a) Scanning with a high-frequency linear transducer shows a protuberant mass in the intestine. Areas of stagnant blood flow in the mass are depicted as spot echoes, and a fluid level is also seen. (b) ADF mode shows intermittent strong blood flow into the mass, which is not pulsatile and is thought to be a varix. (c) Sonazoid contrast imaging clearly demonstrates that the mass is a varix because the contrast agent flows slowly into and is deposited in the mass, which is enhanced slightly later than the surrounding arteries.

Sex	Age
Male	50-59 years

Memo

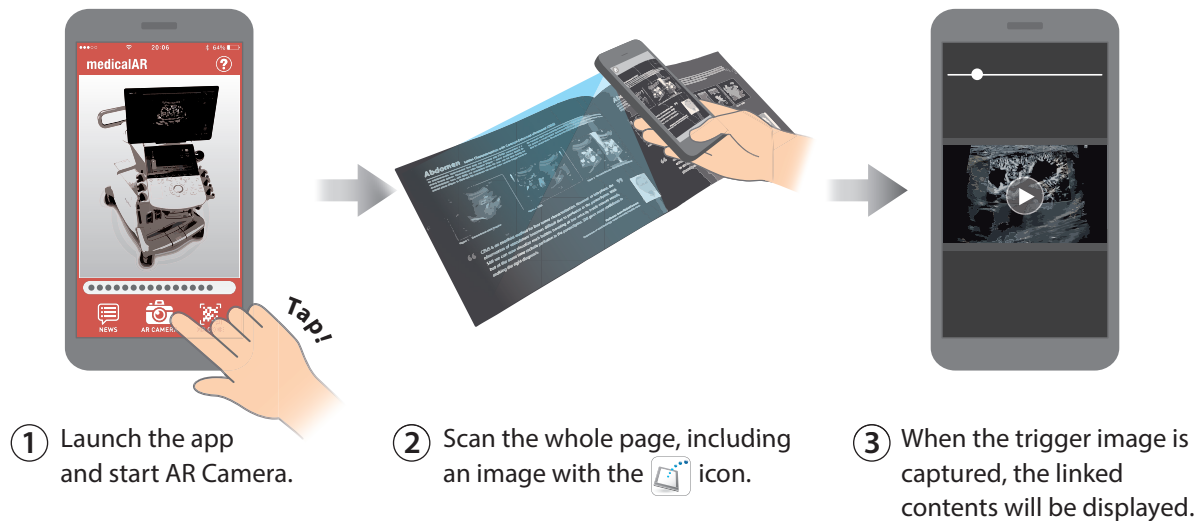
Memo

How to Use the medicalAR App

Images with the  icon can be viewed in motion.

Download the app by scanning the QR code or visit our website:

<https://global.medical.canon/about/medicalAR>



Canon

CANON MEDICAL SYSTEMS CORPORATION

<https://global.medical.canon>

©Canon Medical Systems Corporation 2022. All rights reserved.
Design and specifications are subject to change without notice.
MCAUS0375EA 2022-04 CMSC/MET/Produced in Japan

Canon Medical Systems Corporation meets internationally recognized standards for Quality Management System ISO 9001, ISO 13485. Canon Medical Systems Corporation meets the Environmental Management System standard ISO 14001.

Aplio, ApliPure, Dynamic Flow and Made for Life are trademarks of Canon Medical Systems Corporation.

The results in this document are the findings of the contributors.
Clinical outcomes may vary dependent upon clinical use and environment.

Disclaimer: Some features presented in this brochure may not be commercially available on all systems shown or may require the purchase of additional options. Please contact your local representative from Canon Medical Systems for details.

Made For life