

Capsule endoscopy for investigating the digestion process

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This case report video ([Video 1](#), available online at www.VideoGIE.org) aims to show and investigate the digestion process endoscopically. The subject of this experiment was the presenter, a healthy man in his 50s without any

medication taken. The study was approved by the Ethics Committee of Nippon Medical School Chiba Hokusoh Hospital. After 12 hours of fasting, he swallowed, not chewed, boiled rice with sliced ham and seaweed



Figure 1. The food used in this study. Boiled rice with sliced ham and seaweed (*Laminaria japonica*), including a small amount of sesame seeds.

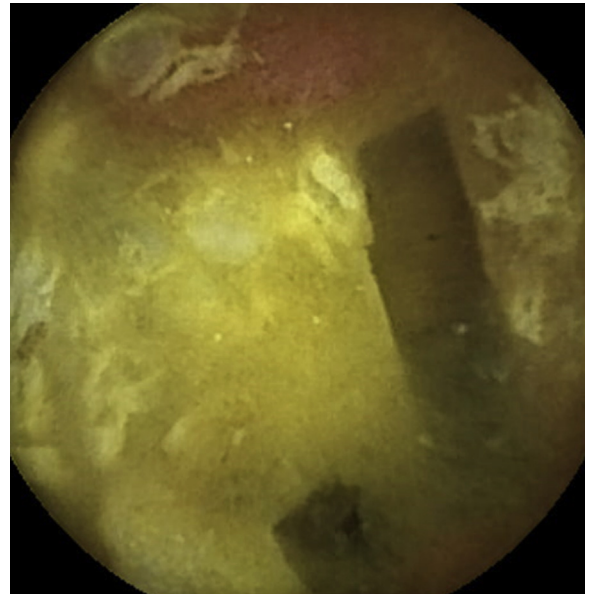


Figure 3. There was no remarkable change in seaweed in the duodenum.

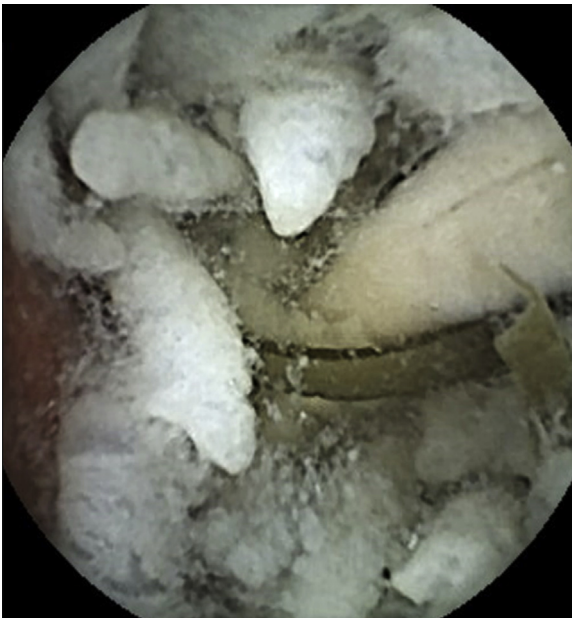


Figure 2. The food was mostly unchanged in the stomach 2 hours after swallowing.

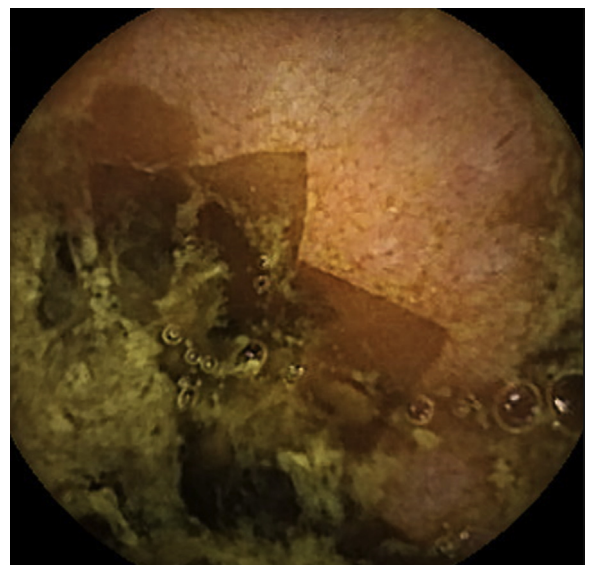


Figure 4. Concentrated, decolored seaweed maintained its shape, and the residue was barely observable in the ileum.

(*Laminaria japonica*), including a small amount of sesame seeds, with 300 mL of water (Fig. 1). Two hours after the food was swallowed, he also swallowed a capsule endoscope (PillCam SB3; Covidien, Dublin, Ireland) to start this experiment.

At the beginning, the capsule endoscopy recorded the swallowed food, which was mostly unchanged in the stomach (Fig. 2). Two hours and 40 minutes after the food was swallowed, the capsule endoscope entered the duodenum and recorded mashed rice and yellowish bile, but there was no remarkable change in the seaweed (Fig. 3). About 5 hours after the food was swallowed, the capsule endoscopy showed concentrated, decolorized seaweed, which maintained its shape, and the residue was barely observable in the ileum to the cecum (Fig. 4).

In the ileum, the rice and ham were not detected to be digesting or to be absorbing liquid. Thus, the rice and ham were absorbed, and the seaweed was just decolorized in the small intestine. On the basis of the observation of the seaweed, it is assumed that the cell wall of seaweed may be difficult to decompose, but the cell membrane of seaweed can be decomposed from the outside, and cell cytoplasm may be absorbed in the small intestine. The sesame seeds were not remarkably changed throughout the digestive tract.

In this examination, the images show actual absorption ability in the small intestine. Therefore, capsule endoscopy may be useful to investigate the digestion process.

DISCLOSURE

The author disclosed no financial relationships relevant to this publication.

ACKNOWLEDGEMENTS

Part of the study was broadcast on the educational channel of Japan Broadcasting Corporation (Nippon Hoso Kyokai).

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<https://doi.org/10.1016/j.vgje.2019.10.009>

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