

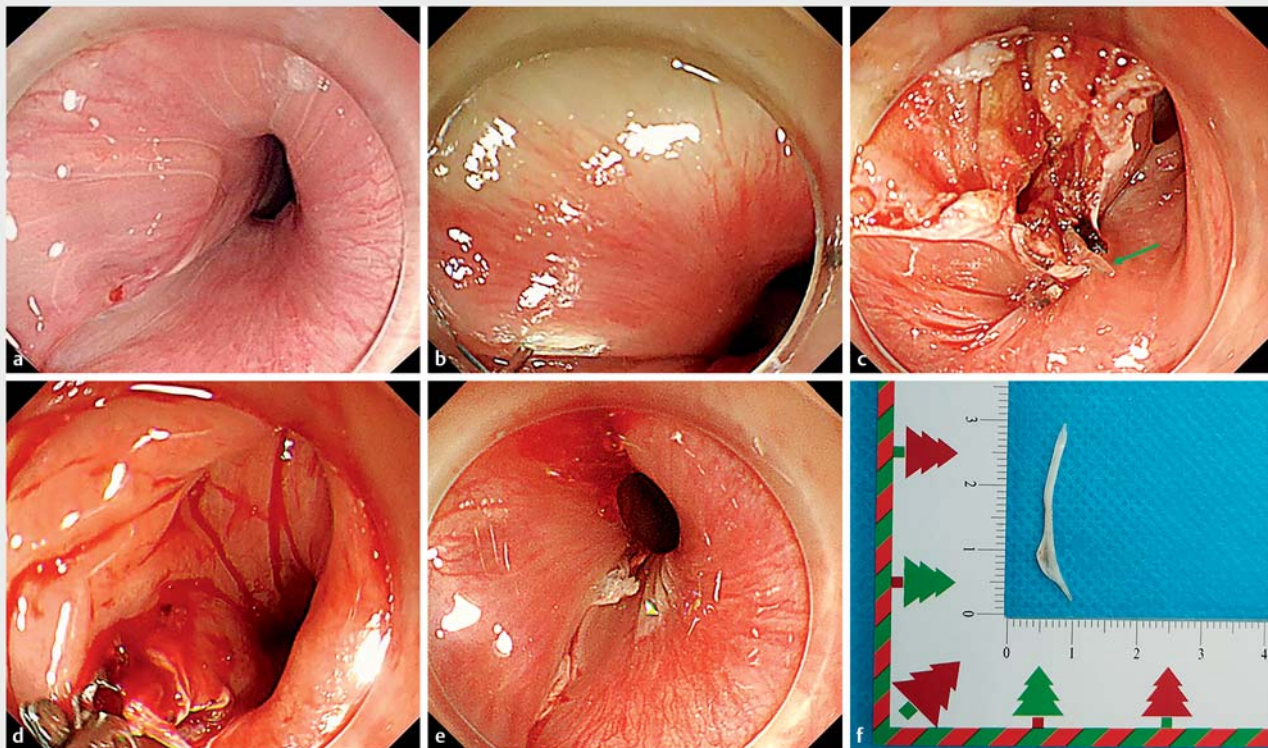
Endoscopic removal of an entirely embedded esophageal fishbone

A 65-year-old man was referred to our hospital with a 3-day history of pain in the upper esophagus after eating fish. Subsequent computed tomography (CT) showed a fishbone in the upper esophagus without any injury to the surrounding vessels. Emergency endoscopy was performed under general anesthesia. During the procedure, we tried to remove the fishbone with biopsy forceps through a high-definition gastroscope (GIF-Q260J; Olympus, Tokyo, Japan). However, only congestion and edema of the local esophagus were confirmed and the fishbone could not be found (▶ **Fig. 1 a**), suggesting that it had become entirely embedded in the esophageal wall. Further evaluation of the location of the fishbone was completed based on the endoscopic find-

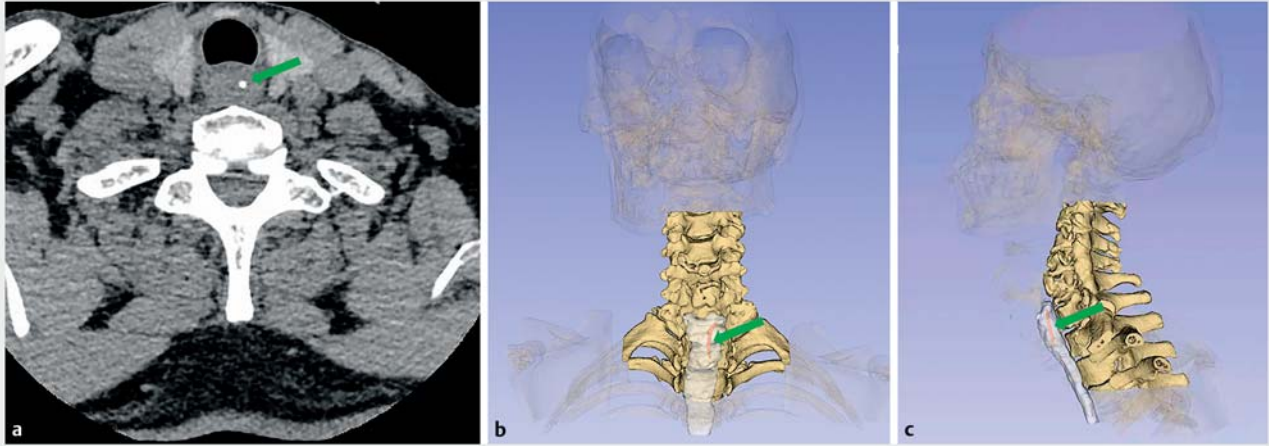
ings, CT scan, and three-dimensional image reconstruction (▶ **Fig. 2**). After full communication with the patient, a second try was made (▶ **Video 1**). In this process, a hook knife was used to create an incision (▶ **Fig. 1 b**) and the fishbone was partially exposed (▶ **Fig. 1 c**). Next, the 3-cm-long fishbone was successfully extracted using grasping forceps (▶ **Fig. 1 d, f**), without closing the esophageal incision (▶ **Fig. 1 e**). The whole endoscopic procedure only took about 10 minutes as an outpatient procedure; the patient was discharged immediately and was allowed a liquid diet 6 hours after treatment. The operative and postoperative periods were uneventful, without any complications.

Although the fishbone in the present case was successfully removed endoscopically, endoscopic removal of entirely embedded foreign bodies still remains challenging [1]. Therefore, it is suggested that impacted foreign bodies should be removed within 24 hours, no longer, which will increase the likelihood of successful removal and decrease the risk of complications [2]. Meanwhile, in order to ensure the safety of the operation, it is highly critical to identify the location of the foreign body and evaluate its location in relation to the surrounding organs and vessels before removing it endoscopically [3].

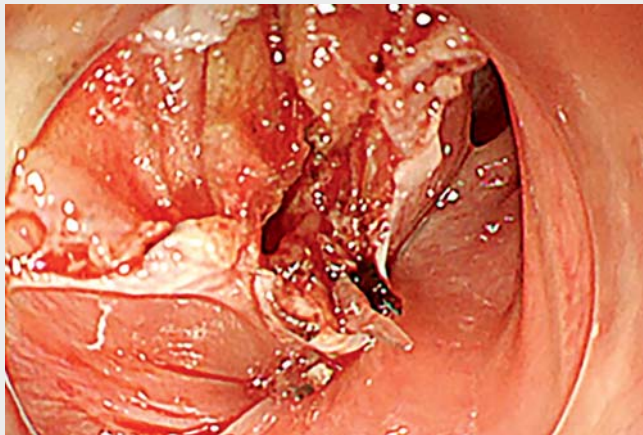
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▶ **Fig. 1 a–f** Endoscopic removal of a fishbone entirely embedded in the esophagus. **a** Localized esophageal congestion and edema; the fishbone cannot be seen. **b** Incision of the esophageal mucosa using a hook knife. **c** Partial exposure of the embedded fishbone. **d** Extraction of the fishbone using grasping forceps. **e** The mucosal defect. **f** The extracted fishbone.



▶ Fig. 2 a–c Evaluation of the location of the fishbone by computed tomography (CT) and three-dimensional (3D) image reconstruction. **a** Location of the fishbone (green arrow) on CT scan. **b** Front view of the 3D image reconstruction (green arrow indicates the fishbone). **c** Side view of the 3D image reconstruction (green arrow indicates the fishbone).



▶ Video 1 Endoscopic removal of an entirely embedded esophageal fishbone.

References

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Competing interests

The authors declare that they have no conflict of interest.

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