

Supplementary material

Supplementary Table 1 Comparison between ncMCE and MCE.

	ncMCE	MCE
Data recorder	Sheet type	Vest type
Examination area	Two rooms	One room
System fixture	Guidance magnet robot Computer workstation with ESNavi software Endoscopic capsule; capsule locator Data recorder Remote control workstation Audiovisual exchange system	Guidance magnet robot Computer workstation with ESNavi software Endoscopic capsule; capsule locator Data recorder
PPE of endoscopist	Medical mask	N95 mask Isolation gown with water resistance Head cover Eye protection and face shield
Physical isolation	Yes	No

The capsule is 26.7 mm in length, 11.8 mm in diameter, and 4.5 ± 0.5 g in weight, with a guidance magnet robot to control. The field of view is 140 degrees and the depth of view is 0 to 30 mm. After examination with an adaptive frame rate of 8 frames per second (fps), we got the image with 480×480 resolution.

Supplementary Questionnaire 1 Improved questionnaire for pre-procedure perception and post-procedure satisfaction.

Pre-procedure Patient Perception

1. How anxious are you about the MCE/Nc-MCE?
4 = not at all; 3 = slightly; 2 = moderately; 1 = excessively
2. Do you expect any pain during the MCE/ ncMCE?
4 = not at all; 3 = slightly; 2 = moderately; 1 = excessively
3. How well do you know about Nc-MCE/the concept of Non-contact
4 = very well; 3 = well; 2 = ever heard but not know well; 1 = never even heard

Post-procedure Patient Satisfaction

4. How would you rate the swallowing/insertion of the instrument?
4 = very easy; 3 = easy; 2 = tolerable; 1 = difficult; 0 = very difficult
5. Did you experience pain during the procedure?
4 = none; 3 = minor; 2 = mild; 1 = severe; 0 = intolerable

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6. Did you experience discomfort during the procedure?
4 = none; 3 = minor; 2 = mild; 1 = severe; 0 = intolerable
7. Did you experience pain after the procedure?
4 = none; 3 = minor; 2 = mild; 1 = severe; 0 = intolerable
8. Did you experience discomfort after the procedure?
4 = none; 3 = minor; 2 = mild; 1 = severe; 0 = intolerable
9. How would you rate the examination procedure?
4 = very comfortable; 3 = comfortable; 2 = tolerable; 1 = uncomfortable; 0 = very uncomfortable
10. If you would be given the possibility to select an examination for diagnosing your problem, would you choose this particular procedure?
4 = definitely yes; 3 = probably yes; 2 = maybe; 1 = probably not; 0 = definitely not
11. Rate the overall convenience of the test.
4 = very convenient; 3 = convenient; 2 = not sure; 1 = inconvenient; 0 = very inconvenient
12. How much time did you miss from work or regular activities due to the test?
4 = 0-2 hours; 3 = 3-4 hours; 2 = 5-6 hours; 1 = 7-8 hours; 0 = >8 hours
13. Do you think it is necessary to perform nc-MCE during the outbreak?
4 = very necessary; 3 = necessary; 2 = not sure; 1 = unnecessary; 0 = very unnecessary
14. Do you think the Nc-MCE put you to any inconvenience?
4 = definitely not; 3 = not; 2 = not sure; 1 = yes; 0 = definitely yes
15. Rate the overall acceptance of the test.
4 = very acceptable; 3 = acceptable; 2 = moderate; 1 = acceptable only in special situations; 0 = unacceptable

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Supplementary Questionnaire 2 Maneuverability questionnaire.

1. Rate the fluency of signal transmission.
5 = very fluent; 4 = fluent; 3 = moderate; 2 = delayed; 1 = seriously delayed;
2. Rate the stability of signal transmission while CE is moving.
5 = very stable; 4 = stable; 3 = moderate; 2 = instable; 1 = serious instable;
3. Rate the level of strength to control joysticks. (define MCE as 5)
5 = very light; 4 = light; 3 = moderate; 2 = heavy; 1 = very heavy;
4. Rate the fatigue degree while controlling joysticks
5 = very easy; 4 = easy; 3 = moderate; 2 = fatigued; 1 = very fatigued;
5. Rate the compliance of patients while performing the MCE or ncMCE.
5 = very compliant; 4 = compliant; 3 = moderate; 2 = noncompliant; 1 = very noncompliant;
6. Rate the visualization of gastric mucosa
5 = very clear; 4 = clear; 3 = moderate; 2 = unclear 1 = very unclear.

The signal transmission was evaluated by the quality stability and fluency and the score of it was evaluated by the average score of questions 1 and 2.

The comfort of the endoscopist was evaluated based on the strength needed to control the joysticks and degree of fatigue and the score was evaluated by averaging the scores for questions 3 and 4.