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Performance Study of Wireless Fecobionics Device in Canine

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ABSTRACT

We developed a novel wireless device (Fecobionics) for mapping colonic and anorectal neuromuscular function. The hypothesis of this protocol is that the Fecobionics device can test pressures, orientation, bending, shape, and cross-sectional area changes in colon and rectum. To validate our hypothesis, we inserted the device to the proximal colon, either through a cannula or colonoscopy, followed by data transmission and recording.

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KEYWORDS

Colon, bionics, cannula, colonoscopy, fluoroscopy

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Cannula test

- 1 After a laparotomy, a cannula was implanted into the proximal of the colon (4-5 cm to cecum)

- 2 The external end of the cannula was screwed by a cap, which is able to open for device insertion
- 3 After 10-14 days recovery, the Fecobionics was inserted through the cannula for testing
- 4 X-ray fluoroscopy was performed frequently to locate the device. Data was recorded for analysis.

Colonoscopy

- 5 After 2-day laxative and an enema, the animal was anesthetize for colonoscopy
- 6 The Fecobionics was delivered to proximal colon (close to cecum) by an endoscopic rat-tooth forcep
- 7 After the delivery, X-ray fluoroscopy was performed frequently to locate the device. Data was recorded for analysis.