Image and Learning

# A 59-Year-Old Female Presenting With Bloating and Flatulence: Is the Intestinal Gas Volume in Plain Abdominal Radiographs Correlated With Symptoms?

Jie-Hyun Kim, MD, Jung Soo Park, MD, Young Hoon Yoon, MD, Hyojin Park, MD[*] and Sang In Lee, MD

*Department of Internal Medicine, Institute of Gastroenterology, Gangnam Severance Hospital, Yonsei University College of Medicine, Seoul, Korea*

A 59-year-old woman with bloating and flatulence for 6 months visited to our hospital. Her symptoms did not improve after treatment with antiflatulents, prokinetics and probiotics. A plain abdominal radiograph showed a moderate amount of intestinal gas (Fig. 1A). The intestinal gas volume was measured in the plain radiograph using the imaging software Image-pro Plus® (Media Cybernetics Inc, Bethesda, MD, USA).[1] To standardize the quantity of intestinal gas, the ratio of the quantity of intestinal
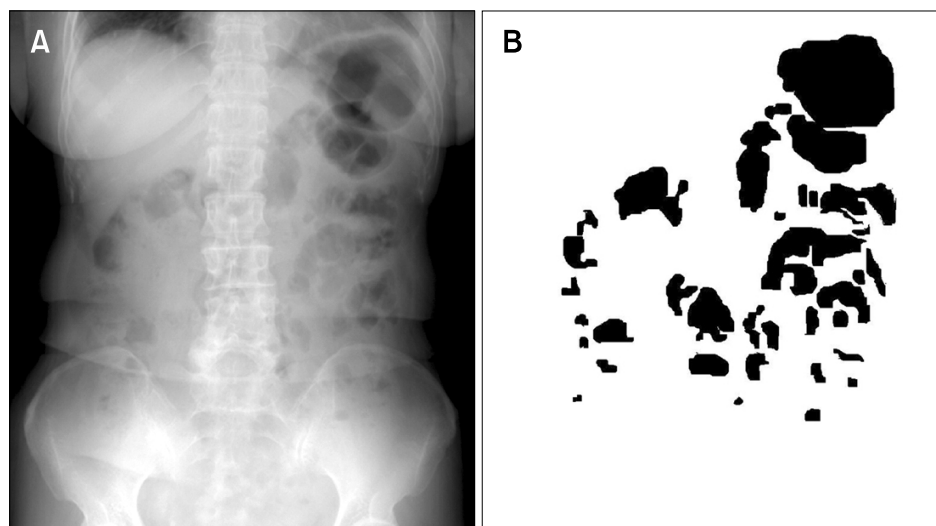


**Figure 1.** The plain abdominal radiograph shows a moderate amount of intestinal gas (A), which has decreased after treatment with an antibiotic (C). The gas volume score (GVS) is measured in the plain abdominal radiograph using imaging software (B, D). The black area shows bowel gas and the black border is the abdominal background. The GVS is calculated as the area of bowel gas divided by the area of background. The GVS decreased from 0.131 (B) to 0.049 (D) following treatment with antibiotic.

*Correspondence: Hyojin Park, MD
Department of Internal Medicine, Institute of Gastroenterology, Gangnam Severance Hospital, Yonsei University College of Medicine, 712 Eonju-ro, Gangnam-gu, Seoul 135-720, Korea
Tel: +82-2-2019-3318, Fax: +82-2-3463-3882, E-mail: HJPARK21@yuhs.ac

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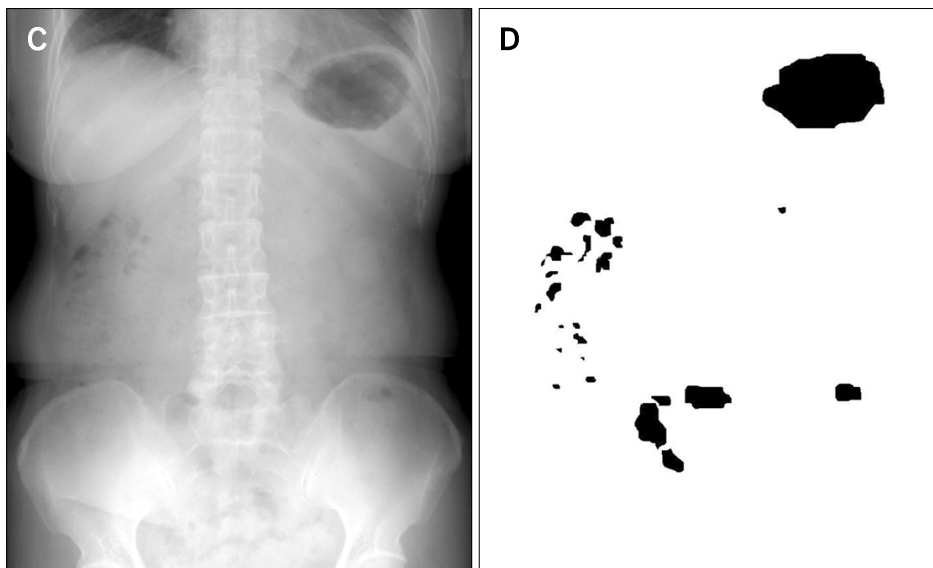www.jnmjournal.org

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**Figure 1.** Continued.

gas to the pixel value in the region surrounded by a horizontal line tangential to the suprasymphyseal margin, a horizontal line tangential to the uppermost point of the diaphragm, and the lateral-most lines tangential to the right and left costal arches was defined as the gas volume score.[2,3] The gas volume score was calculated at 0.131 (Fig. 1B). Since the other medications had not been effective for the bloating, an antibiotics (metronidazole) was started to treat possible intestinal bacterial overgrowth (however, generally rifaximin is used for intestinal bacterial overgrowth). After 2 weeks, her symptoms had disappeared. When the gas volume score was measured in a follow-up plain abdominal radiograph, the amount of intestinal gas in the plain abdominal radiograph had decreased (Fig. 1C) and the gas volume score was lower at 0.049 (Fig. 1D).

The amount of intestinal gas in plain abdominal radiographs may be correlated with bloating symptoms. Moreover measuring the intestinal gas volume might be more useful when combined with a breath test for intestinal bacterial overgrowth.

## References

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