

# An effective rectal administration method in the left semiprone position

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## ABSTRACT

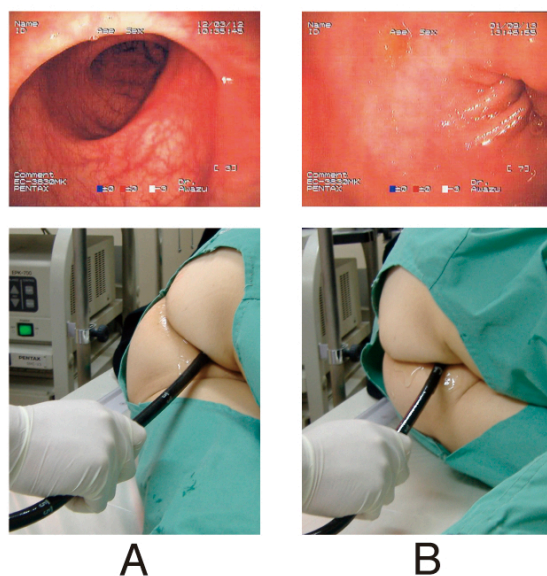
A previous study has shown barium is instilled in the left lateral position or the prone position. However, we previously reported that the colonoscope can be readily inserted into the descending colon in the left semiprone position. Indeed, when the colonoscope was inserted in the left semiprone position, the lumen of the sigmoid colon was observed linearly and the colon position lowered toward the oral side. In addition, it was often observed that the rectosigmoid colon nearly overlapped with the sigmoid-descending colon junction when the patient was placed in the left semiprone position in the single-contrast enema examination. Therefore, we considered that the rectosigmoid colon is located in the highest position while the sigmoid-descending colon junction is located in the lowest position and various kinds of drugs can be readily administered into the proximal colon in the left semiprone position. Our new barium instillation method was devised and this method was performed to determine whether barium can be readily instilled into the proximal colon. Barium (300 ml) passed the hepatic flexure before air insufflation in 32 (67%) of the 48 patients by using our new barium instillation method. By contrast, barium (300 ml) passed the hepatic flexure before air insufflation in 3 (6%) of the 48 patients by using our conventional barium instillation method. These results suggest that effective rectal administration is possible by using our new barium instillation method compared with our conventional barium instillation method.

## INTRODUCTION

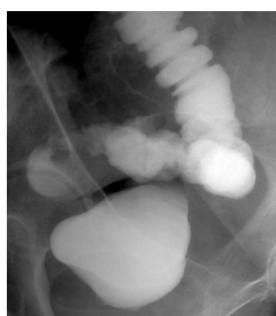
A previous study has shown barium is instilled in the left lateral position or the prone position (Rubesin et al., 2000).

However, we previously reported that the colonoscope can be readily inserted into the descending colon in the left semiprone position (Awazu, Araki & Awazu, 2012). Indeed, when the colonoscope was inserted in the left semiprone position, the lumen of the sigmoid colon was observed linearly and the colon position lowered toward the oral side (Fig. 1-A). In addition, it was often observed that the rectosigmoid colon nearly overlapped with the sigmoid-descending colon junction when the patient was placed in the left semiprone position in the single-contrast enema examination (Fig. 2).

Therefore, we considered that the rectosigmoid colon is located in the highest position while the sigmoid-descending colon junction is located in the lowest position and various kinds of drugs can be readily administered into the proximal colon in the left semiprone position.



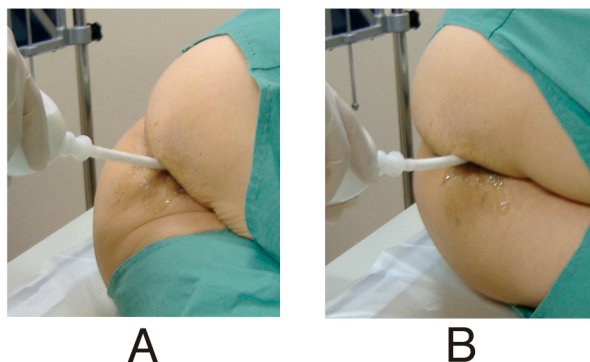
**Figure 1.** The situation we encountered in colonoscopy. When the colonoscope was readily inserted in the left semiprone position, the lumen of the sigmoid colon was observed linearly and the colon position lowered toward the oral side (A), which suggested that the drug can be readily administered into the descending colon. By contrast, when the colonoscope was inserted in the left lateral position, the lumen of the sigmoid colon was observed crookedly (B), which suggested that the drug is retained in the sigmoid colon and the volume that is administered into the descending colon is small.



**Figure 2.** The situation we encountered in the single-contrast enema examination. The patient was placed in the left lateral position, and contrast agent was instilled. When the patient was moved to the left semiprone position, it was observed that the rectosigmoid colon nearly overlapped with the sigmoid-descending colon junction. Therefore, we considered that the rectosigmoid colon is located in the highest position while the sigmoid-descending colon junction is located in the lowest position and the drug smoothly flows down the sigmoid colon in the left semiprone position.

## MATERIALS & METHODS

Our new barium instillation method was devised (Fig. 3-A) and this method was performed to determine whether barium can be readily instilled into the proximal colon compared with our conventional barium instillation method (Fig. 3-B).



**Figure 3.** Barium instillation method. (A) Our new barium instillation method. The patient is placed in the left semiprone position, and barium (300 ml) is instilled. The body position is changed from the left semiprone position to the prone position, the right lateral position and the supine position. An appropriate amount of air is insufflated, the patient is rotated 3 times, and the double-contrast barium enema examination is performed. (B) Our conventional barium instillation method. The patient is placed in the left lateral position, and barium (300 ml) is instilled. The body position is changed from the left lateral position to the supine position, the right lateral position, the prone position, the left lateral position and the supine position. An appropriate amount of air is insufflated, the patient is rotated 3 times, and the double-contrast barium enema examination is performed.

## RESULTS

Barium (300 ml) passed the hepatic flexure before air insufflation in 32 (67%) of the 48 patients (24 were men and 24 were women, and they were 45 to 78 years of age) by using our new barium instillation method. By contrast, barium (300 ml) passed the hepatic flexure before air insufflation in 3 (6%) of the 48 patients (24 were men and 24 were women, and they were 43 to 81 years of age) by using our conventional barium instillation method. Thus, we could readily instill barium into the proximal colon.

## DISCUSSION

These results suggest that various kinds of drugs can be readily administered into the proximal colon by using our new barium instillation method compared with our conventional barium instillation method and many physicians who read this manuscript can perform more effective rectal administration.

We also consider that the drug can be most effectively administered in the left semiprone 15-20 degrees Trendelenburg position, because the rectosigmoid colon most nearly

1 overlaps with the sigmoid-descending colon junction in the left semiprone 15-20 degrees  
2 Trendelenburg position.

3 In addition, while the double-contrast barium enema examination has been superseded by  
4 CT colonography, we consider that barium can be more effectively instilled in the left  
5 semiprone position and evenly distributed to each portion of the colon, which allows more  
6 favorable double-contrast barium enema examination and the improvement of diagnosis in  
7 each portion of the colon.

## 10 REFERENCES

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15 mination technique. *Radiology* 215:642-650.