



FLIPPED LEARNING IN ENDOSCOPY: A TIME EFFECTIVE MODEL TO IMPACT CHANGE IN PRACTICE CULTURE



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Introduction

It is difficult to change practice culture. In a GI department, the few early adopters may seek and adopt new technologies. The majority, who are typically pragmatist and risk averse, however wait until the technologies become community standard. Unfortunately, the technologies may never become community standard without their acceptance. We hypothesized that one way to impact change is by improving the training.

Aim

We propose to use the flipped learning. In flipped learning, direct instructions are self-learned, and the classroom environment is used for dynamic learning and provide personalized hands-on training (Figure 1). We report the adoption rates of two technologies – the over-the-scope clip and the through-the-scope balloon dilatation, after flipped learning.

Method

We prospectively enrolled general gastroenterologists (n=25) and fellows (n=12) who were naïve to these two techniques at a large tertiary hospital. We used a cloud-based learning management system and provided them with self-learning materials, which included important studies, procedural steps, instructional movies, and self-assessment materials. We gave them a month to complete the cloud-based learning. We then conducted a hands-on training course using silicone and explant models. The participants alternated the role of assistant and endoscopist to become familiar with all aspects of the procedural technique. Post-course we tracked their performance in clinical practice. We received an Exempt Status from our IRB office.

Results

Twenty-four gastroenterologists (mean duration of practice, 4.9 ± 4 year) completed the over-the-scope clip module, and nine additionally completed the dilatation module. Twelve fellows completed both the modules. Within a short-time period of two months, 10 over-the-scope clips were successfully applied to treat bleeding (n=6) and perforation (n=4), and 7 dilatations were successfully performed to treat benign gastro-esophageal strictures. There was a threefold increase in the adoption rate for over-the-scope clip (12% vs. 4%) among gastroenterologist and seventeen-fold increase in dilatation rate among fellows (17% vs. 0%) as compared to pre-course clinical practice. The improved adoption rate occurred after a short training time. The gastroenterologists spent a mean time of 1.4 ± 1.5 hours in the clip module and 1.5 hours to practice experientially in models. The fellows spent 0.3 ± 0.2 hours to learn the dilatation module and 1.5 hours on experiential learning. All completed the hands-on experiential course satisfactorily.

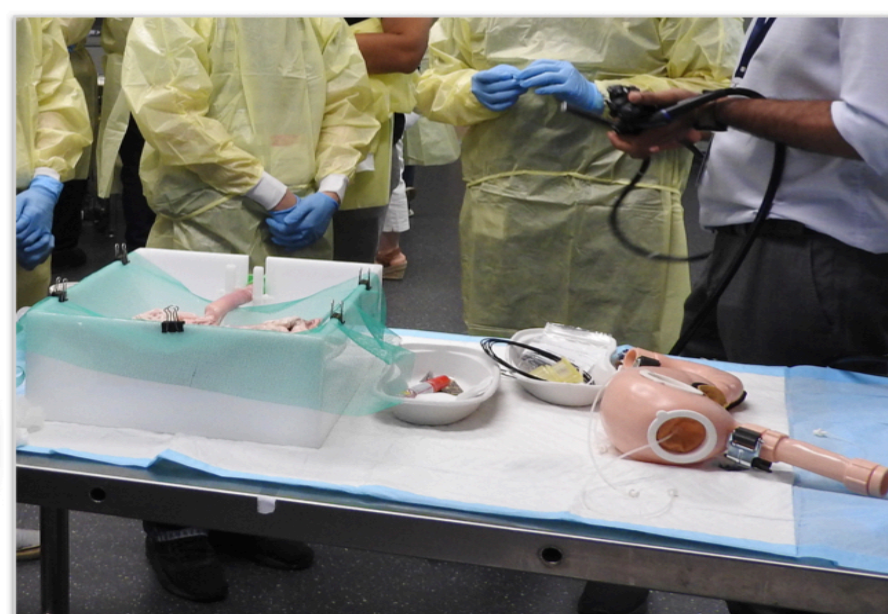
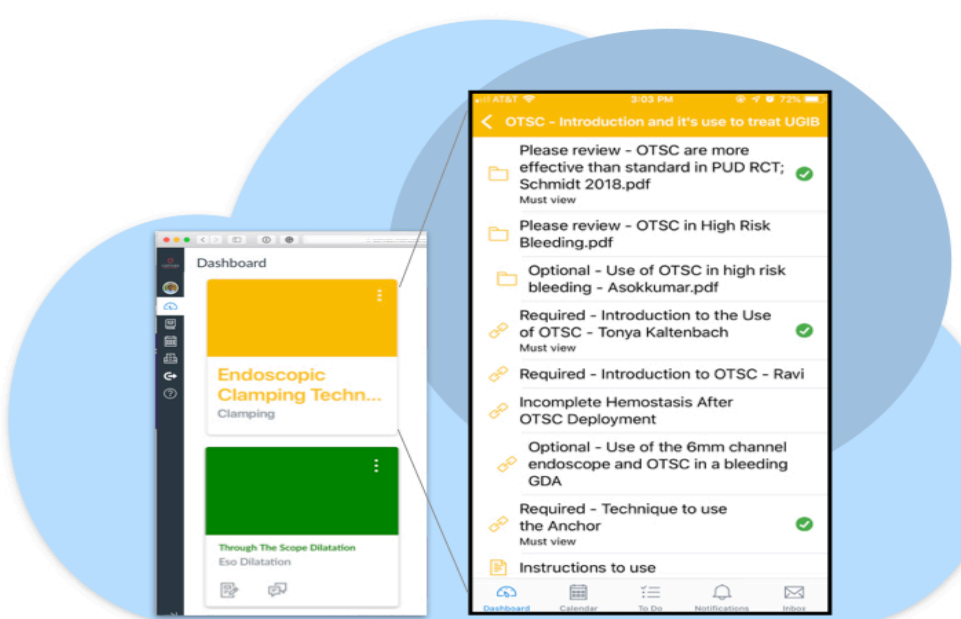
Conclusion

In this group of gastroenterology practice, we show flipped learning has contributed to the adoption of a relatively complex procedure, the-over-the scope clip application, and wider embracement of an established technique-the endoscopic balloon dilatation within a short learning time.

Contact information

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The Flipped Endoscopy Learning Framework



Trainee Name: Faculty Name:	Key Manover	Trainee Performed	Attempt: Trainee Not Performed
Scope Holding			
Assess the Stricture			
Advance guide wire accurately across stricture			
Advances the balloon while keeping wire stationary			
Place the stricture at the center of balloon			
Holding the catheter and scope while inflating balloon			
Deflate the balloon before reflation			
Inspect for tear			

- 1 Self-study the Background Knowledge**
On a cloud-based Learning Management System, study the required and optional, written and multi-media material.
- 2 Pass a Self-Assessment test**
Pass an automatically-scored test which is administered through the LMS.
- 3 Learn Hands-on using Models**
Dynamic personalized training of the procedural skills using a step-by-step manual until the learner feels competent and comfortable.
- 4 Assess Technical Skills**
Learners must demonstrate complete competence of the technique in order to satisfactorily complete the course.
- 5 Follow-up information**

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