

## Original Research Article

# Diagnostic yield of video capsule endoscopy in obscure occult gastrointestinal bleed

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### ABSTRACT

**Background:** Gastrointestinal blood loss is the leading cause of iron deficiency anemia in developing world. Many patients had normal findings on initial upper and lower gastrointestinal endoscopy. When such patients present with stool occult blood positivity, it's an indication to evaluate small bowel by video capsule endoscopy for detecting possible source of bleeding. Aim was to know the diagnostic yield of video capsule endoscopy in anaemic patients with occult gastrointestinal bleed.

**Methods:** In this retrospective study, we evaluated all the data of video capsule endoscopy which were done in patients with obscure occult gastrointestinal bleed.

**Results:** Total sample size was 21 patients. M:F ratio was 1.6:1 Average age of patients was  $51.52 \pm 6.3$  years. Youngest patient was of 16 years and Oldest patient was of 78 years. Video capsule endoscopy was normal in 8/21(38.09%), and had positive findings in 13/21(61.90%). Most common finding was aphthous ulcer in jejunum and ileum in 19.04%. Followed by Telangiectasia in 14.28%, NSAID enteropathy in 4.76%, Jejunal diverticulosis in 9.52%, celiac disease, xanthelasma, enteroliths in ileum, ileal nodularity in 4.76% each. Complication occurred in one patient (4.76%) in the form of retention of the capsule, which was retrieved by double balloon Enteroscopy.

**Conclusions:** Video capsule endoscopy has a good diagnostic yield of around 61.90% in patients with obscure occult gastrointestinal bleed. It is best performed during ongoing bleed or immediately thereafter. Careful patient selection and repeating the upper and lower GI Scopy before video capsule endoscopy can be a reliable option before video capsule endoscopy to prevent complication.

**Keywords:** Capsule endoscopy, Obscure occult gastrointestinal bleed

### INTRODUCTION

Modalities which are used for visualization of small bowel are push Enteroscopy, double balloon Enteroscopy and video capsule endoscopy. Each of these modalities are having their own advantages and disadvantages. Video capsule endoscopy is one of the newer imaging modality especially suited for diagnosing the mucosal diseases of small intestine. This procedure is applicable

for the evaluation of many clinical diseases like celiac disease, Crohn's disease and various small intestinal tumors; however, it is primarily used in the evaluation of the patients with obscure gastrointestinal bleed (OBGI).

Obscure gastrointestinal bleeding is defined by the American gastroenterological association as persistent or recurrent gastrointestinal (GI) bleeding, undetected by gastroduodenoscopy (GDS) and colonoscopy. This is

further divided in either obscure-occult bleeding presenting as persistent iron deficiency anaemia (IDA) or a positive fecal occult blood test, or obscure-overt bleeding when visible blood is found as Malena, hematemesis or hematochezia.<sup>1</sup>

Capsule endoscopy is now an important diagnostic modality for the analysis of OGIB, as it has a higher diagnostic yield compared to other imaging techniques of the small bowel, including push Enteroscopy (PE) and small bowel barium radiography and a comparable diagnostic yield as double balloon endoscopy (DBE).<sup>2,3</sup> Determining the value of CE for diagnosing causes of OGIB remains difficult.

Data regarding the Exact diagnostic yield of capsule endoscopy in settings of anemia with occult gastrointestinal bleed in central india is limited. Hence, we analyzed the data of capsule endoscopy in patients with obscure occult gastrointestinal bleeding to look for its diagnostic yield in our tertiary care centre.

**METHODS**

Institutional ethics committee approval was taken prior to the start of study. All the data of patients who underwent video capsule endoscopy From January 2014 to December 2016 at department of gastroenterology, government medical college and super specialty hospital, Nagpur, Maharashtra, India, was collected retrospectively and was analyzed.

**Inclusion criteria**

Age ≥12 years, Anemia with Stool occult blood positive patients, normal reports of esophagogastroduodenoscopy and colonoscopy were included. No history of hematemesis/Malena.

**Exclusion criteria**

Age ≤12 years, Pregnant patients, documented intestinal obstruction, stricture, inability to swallow capsule. Patients having permanent cardiac pacemakers/defibrillators were excluded. Obvious history of hematemesis and/or Malena.

Every patient was asked to stop iron supplementation a week before the procedure of CE if they were taking it. Standard preparation of the small bowel was by ingestion of 2 liters of polyethylene glycol solution 12 hours before capsule intake with overnight fasting. Syrup simethicone as an antifoaming was taken after bowel preparation.

Since both exercise and bed rest may influence CE transit time, patients were advised to adhere to daily routine during the investigation without excessive exercise. All patients were told to check their stools carefully for retrieval of the video capsule and were asked to return the capsule.

**Diagnostic imaging system of CE**

MiroCam CAPSULES Model no 1000 W (Intromedic) were used. Specifications of the capsule are as follows: Size 10.8x24.5 mm, Weight 3.25±0.05g, Frame rate 3 frames/second, Field of view 170°. This capsule proceeds by intestinal peristalsis only. The data are transmitted to a hard disk worn on a belt by the patient. Total recording time for this device is 12 hours.

The images were reviewed by two trained gastroenterologists independently. Most patients (both positive and negative findings) were managed supportively with oral or parenteral iron supplementation being the most common therapy.

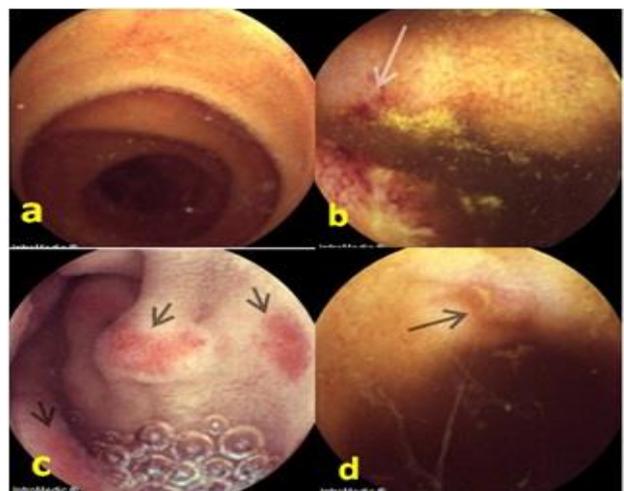
**Statistical analysis**

The statistical programme SPSS 14.0 (SPSS Inc., Chicago, IL) was used for all frequency analysis and descriptive statistics.

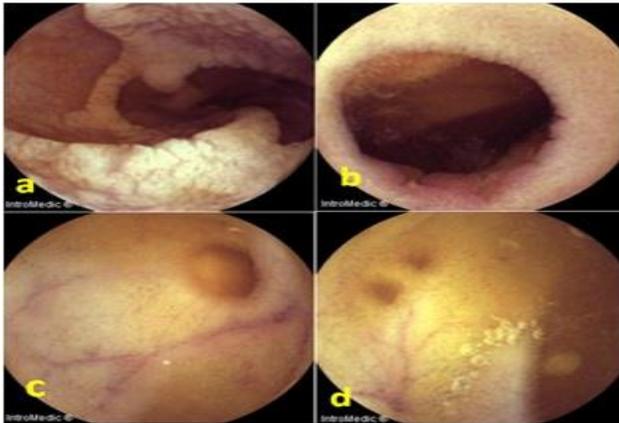
**RESULTS**

Total patients were 21.M: F ratio was 1.6:1. Mean age of patients was 51.52±6.3 years. Youngest patient was of 16 years whereas oldest patient was of 78 years. video capsule endoscopy was normal in 8/21 (38.09%), and had positive diagnostic findings in 13/21 (61.90%).

Most common finding was aphthous ulcer in jejunum and ileum in 19.04% (Figure 1), followed by Telangiectasia in 14.28%, NSAID enteropathy in 4.76%, Jejunal diverticulosis in 9.52%, celiac disease (Figure 2), xanthelasma, enteroliths in ileum (Figure 3), ileal nodularity in 4.76% each. Complication occurred in one patient (4.76%) in the form of retention of the capsule, which was removed by double balloon Enteroscopy.



**Figure 1: a) Normal video capsule study, b) Telangiectasia, c and d) Aphthous ulcers in jejunum and ileum.**



**Figure 2:** a) Scalloping of distal duodenal folds, b) NSAID enteropathy, c and d) Diverticuli in jejunum.



**Figure 3:** a) Fecoliths in terminal ileum, b) Smooth surfaced bulge in terminal ileum? lipoma, c and d) Xanthelasma in jejunum.

**DISCUSSION**

In the era of advanced imaging, the indications for video capsule endoscopy are increasing and so are the numbers of procedures. The consensus statement from the 2005 international conference on capsule endoscopy (ICCE) recommends CE after initial negative esophagogastroduodenoscopy and colonoscopy in patients with obscure gastrointestinal bleed.<sup>4</sup> Current study has a positive diagnostic yield of video capsule in 61.09%. Patients with occult gastrointestinal bleed. This is in accordance with diagnostic yield of CE published in a recent meta-analysis by Teshima et al. where the diagnostic yield was 62.7%.<sup>5</sup> The diagnostic yield reported in a previous Indian study was 52%.<sup>6</sup> Various meta-analyses have reported a diagnostic yield of 61%-63%. The diagnostic yield was similar in both males and females.<sup>7</sup> It is well established that patient selection and timing of the CE procedure largely influence outcome percentages. Etiology for OGIB as detected by CE has varied from study to study. Small bowel ulcers were the

commonest finding in present study. Goenka et al, also had ulcers as the commonest finding in their study.<sup>8</sup> Vascular telangiectasias of small bowel was the second most common findings in present study. Comparable results were seen in the study of Tong et al, Zhang et al, in their review had proposed angio-dysplasia as the most common cause of OGIB in patients age >65 years.<sup>9,10</sup>

**Table 1: Video capsule endoscopy findings.**

Video capsule endoscopy findings		
Normal study	8/21	38.09%
Positive yield in	13/21	61.90%
Telangiectasia	3/21	14.28%
Pyloric rim ulcer	1/21	4.76%
NSAID enteropathy	1/21	4.76%
Celiac disease	1/21	4.76%
Aphthous ulcer in jejunum and ileum	4/21	19.04%
Xanthelasma	1/21	4.76%
Jejunal diverticulosis	2/21	9.52%
Fecoliths in ileum	1/21	4.76%
Ileal nodularity	1/21	4.76%

One patient in present study had evidence of NSAID enteropathy. NSAID enteropathy was considered as the diagnosis in clinical context, when history of ongoing or recent i.e., in <2 weeks history of NSAID/aspirin consumption was available. NSAIDs can cause multiple erosions, ulcerations, and strictures characteristically “Diaphragm like” strictures as seen in our patient. These NSAID induced lesions are the potential lesions to cause gastrointestinal bleed. This blood loss can be acute or more commonly chronic as occult gastrointestinal blood loss.<sup>11</sup> Pennazio et al, reported that the highest video capsule endoscopy (CE) yield was in patients with active bleeding (92.3%) or occult bleeding (44.2%), whereas patients with previous overt bleeding had the lowest yield (12.9%).<sup>12</sup>

One patient in present study was diagnosed with the celiac disease when capsule endoscopy showed typical scalloping of distal duodenal folds, which was subsequently confirmed by IgA tTG positivity. The patient was put on gluten free diet and responded well. The most common signs compatible with celiac disease on video capsule endoscopy are the reduction or absence of Kerckring folds (65%), followed by scalloping (55%) and a mosaic pattern with nodularity (32%).<sup>10</sup> Capsule endoscopy can detect villous atrophy with greater sensitivity than conventional endoscopy (92% versus 55%).<sup>13</sup>

Retention of capsule is one of the major complications, which in present study occurred in 1 patient. This retained capsule was retrieved by double balloon Enteroscopy. The risk for capsule retention should be assumed in patients with known Crohn’s disease, clinical or radiologic signs of obstruction, a history of abdomino-

pelvic radiation, and after small bowel resection. Most retained capsules are asymptomatic with the longest duration of asymptomatic retention reported being 4.5 years.<sup>14</sup> For retained capsule conservative treatment should be considered when there is no need for immediate surgery by treating the underlying cause, that is, use of anti-inflammatory agents or colonoscopy preparation fluids, which may lead to spontaneous passage.

Limitation of this study was sample size is small, larger studies will be required in future. The duration of anemia is variable in our patients that could have negative impact on diagnostic yield of capsule endoscopy as the lesions might have healed overtime. Diagnostic yield of CE might be influenced by many factors including severity of anaemia and the timeframe in which it develops.

## CONCLUSION

Video capsule endoscopy has a good diagnostic yield in patients with obscure occult gastrointestinal bleed. Procedure is safe, easy and can be repeated when indicated. Careful patient selection and repeating the upper and lower GI Scopy before video capsule endoscopy can be a reliable option before video capsule endoscopy. It is best performed during ongoing bleed or immediately thereafter. Timely use of capsule endoscopy in obscure occult gastrointestinal bleed can make early diagnosis and will help in management as they say a stitch in time saves nine.

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