

## MAGNIFICATION COLONOSCOPY WITH CHROMOSCOPY

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### What is ?

Magnification colonoscopy (MC) concerns a new diagnostic tool in uses fiberoptic technology to magnify the view of the colon and constitutes a technological evolution compared to traditional endoscopy. Since now, it has been feasible visualizing the colon mucosal surface only with low resolution but any informations about thin mucosal and sub-mucosal layers were unlikely. In addition, MC magnifies the view of the colon to about 75 to 100 times its normal size. As a point of comparison, standard **colonoscopy** uses 45-fold magnification. Furthermore, a tissue staining method , named chromoscopy, is used as an adjunctive technique during gastrointestinal endoscopy. The endoscopic tissue-staining techniques are four: in use are vital staining, contrast staining, reactive staining and tattooing. The most common vital staining is Methylene blue which is taken up by absorbing tissues such as small intestinal and colonic cells. Indigo carmine is a contrast stain that is not taken up by cells. Instead, it accumulates in pits and valleys between cells highlighting the mucosal architecture that becomes even more apparent with the use of magnification or high resolution endoscopy, or both.

### What is it for?

Flat adenomas and carcinomas can be difficult to detect by conventional colonoscopy alone, often presenting as subtle mucosal erythema, mucosal pallor, fold convergence, interruption of innominate grooves, air induced deformation, or loss of vascular net pattern. The neoplastic risk for this morphologically distinct group has additionally been shown by many authors to be higher when compared with exophytic polypoid lesions and exhibit a propensity for the right colon. Chemical agents are applied to the gastrointestinal mucosal surface to identify specific epithelia or to enhance the mucosal surface characteristics of the gastrointestinal epithelium. This aids in the recognition of subtle lesions (ie, polyps) or allows directed targeting of biopsies (ie, sprue or Barrett's esophagus) to increase the yield of endoscopic diagnostic accuracy. Although around for many decades, chromoscopy is still widely underused in Western countries as compared with, for example, Japan. Non-polypoid lesions comprise up to 32% to 45% of all early neoplastic colonic lesions in the Japanese population. Thus, MC has allowed to find up to 50% of such tumours in early stage, resulting in good improvement of survival rates.

### How to perform it?

During the colonoscopy, the physician sprays a dye into the colon which highlights areas of dysplasia, based on the shape and appearance of the colon (called "pit pattern") and the uptake of dye. Magnification is needed to help the physician better and more fully visualize any areas of dye deposition. Actually the highest really achievable magnification accounts for 170 x. The most famous classification concerning pig patterns has been proposed by Kudo and it has been founded on a close correlation between pig patterns, endoscopic views and histological findings. Such author, in 2001, published a study showing that this procedure is used to screen for dysplasia and/or cancer in patients who are at high risk for **colon cancer** with a sensibility of 93.8% and a specificity of 64.6%.



### **What are related limits?**

The test is currently only available at a limited number of medical centers. Early diagnosis has to be supported by a proper knowledge concerning how tumour appears in such stage. The technique needs a adequate learning curve and the physician performing the test must be trained to recognize the "pit patterns" that signify dysplasia.

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