ENDOSCOPIC SUBMUCOSAL DISSECTION

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What it is

Endoscope treatment of preneoplastic and early neoplastic lesions of the digestive tract has evolved in the last years thanks to a complex technique. This technique aims at the resect en-bloc deep down to the muscular layer of early lesions of over 2 cm in diameter, which are becoming more and more frequent today.
This technique, called ESD (Endoscopic Submucosal Dissection), was developed in Japan (1) where the incidence of early lesions of the upper digestive tract (oesophagus & stomach) is high, while in western countries it has been proposed for the treatment of early colon-rectal lesions, more frequent in our countries (2). ESD is based on the use of specific needles that create and incise the mucosal and sub mucosal layers, allowing a radical "surgical" resection of lesions otherwise non resectable in a number of specimens with different techniques.
ESD is based on the use of a diathermic needle like a scalpel that incises the normal mucosal around the lesion, exposing the sub mucosal layer progressively resected till the entire resection of the target lesion has been completed.

How it is performed

To perform ESD, other than accessories commonly available In Endoscopic Units (needles, transparent caps, metallic clips), specific needles are needed to dissect the sub mucosa and monopolar forceps to coagulate. The Diathermic needles used to dissect the sub mucosa each have a peculiarity. The most common has a ceramic ball at the tip that prevents transmission of HF, therefore limiting the risk of perforation.

Which are the indications

Currently ESD has been indicated for flat and sessile lesions, histologically benign or malignant with infiltration of the wall limited to the mucosal layer (3). For this reason, before taking ESD into consideration, it is preferable to perform an endoscope ultrasound investigation of the depth of the invasion of the wall and/or of the presence of enlarged/suspected lymph nodes in the surrounding tissue. Magnifying endoscopy and Chromoendoscopy represent major steps forward in the diagnosis of similar lesions. Magnifying endoscopy consists in the use of flexible endoscopes equipped with zoom cameras capable of enlarging the image field more than a hundred times, while chromoendoscopy consists in the use of colouring agents that enhance mucosal patterns characteristics. Both Magnifying endoscopy and Chromoendoscopy together have very much improved the precision of diagnosis of colorectal cancer at an early stage, as they allow a classification of the patterns of the mucosal cells, modified in the progression towards displasia and malignancy. Each pattern corresponds to a different risk of malignancy. Their application is not yet routine, due to the high costs of the instrumentation and the longer operative time.

Advantages and disadvantages

The advantage of ESD is that in the majority of cases the pathologist is offered the possibility of examining the entire lesion, allowing a correct definition of free resection margins, deep layers infiltration and therefore allowing a reasonable decision on the curative treatment to be adopted. ESD becomes therefore a diagnostic tool other than a therapeutic tool, as it determines the adequacy of the local treatment or the need of further treatment in the event of risk of disease progression that happens, in less than 10% of selected cases.

The disadvantage of ESD lies in the technical difficulty of its performance. The procedure requires consistent training of a whole medical/paramedical team, and the performance of mucosecomies for lesions > 2cm may require even more than 2 hours. The intervention is performed generally in the endoscope unit, in mild sedation as for a routine colonoscopy. Before discharge it is generally preferable that patients remain under observation at least 24 hours, even up to 48-72 hours. As after dissection there is not a synthesis of the superficial layers but the wound remains open and heals spontaneously, a mild bleeding is often noticed that is generally controlled by adrenalin injection under repeated colonoscopy. Blood transfusion is required in less than 5% of the cases. Also the risk of perforation is lower than 5% in expert hands, and is controlled endoscopically by clips, without requiring surgical treatment. As the lesions that are removed by this technique are significantly large, in less than 5% of cases a mild hyperthermia is observed due to transient bacteraemia that is controlled by the administration of antibiotics and fasting for few days. In most cases complications are managed endoscopically although the need for emergency surgery cannot be excluded.

Bibliography:

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