RECENT TRENDS IN MANAGEMENT OF COLONIC POLYPS

Essay

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LIST OF ABBREVIATIONS

ACF	Aberrant Crypt Foci.
AFAP	Attenuated Familial Adenomatous Polyposis.
AFI	Auto Fluorescence Imaging.
APC	Argon Plasma Coagulation .
APC Gene	Adenomatous Polyposis Coli Gene.
APS	Adenomatous Polyposis Syndrome.
ASBT	Apical Sodium Dependent Bile Acid Transporter.
ATFAP	Atypical Familial Adenomatous Polyposis.
BMI	Body Mass Index.
BRRS	Bannayan-Riley-Ruvalcaba Syndrome.
CCS	Cronkhite-Canada Syndrome.
CHPRE	Congenital Hypertrophy of The Retinal Epithelium.
CLE	Confocal Laser Endomicroscopy .
CLER	Combined Laparoscopic– Endoscopic Resections.
CNS	Central Nervous System.
COX-2	CycloOxygenase- 2.
CRC	ColoRectal Cancer.
CS	Cowden Syndrome.
CT	Computed Tomography.
CTC	Computed tomographic colonography.
CVC	Computed Virtual Chromoendoscopy.
DCBE	Double-Contrast Barium Enema.
DIA	DNA Integrity Analysis.
EASR	Endoscopy-Assisted Segment Resection.
EATR	Endoscopy-Assisted Transluminal Resection.

EAWR	Endoscopy-Assisted Wedge Resection.
EMA	Endoscopic Mucosal Ablation .
EMR	Endoscopic Mucosal Resection .
EMR-P	EMR-Precutting.
ESD	Endoscopic Submucosal Dissection .
FAP	Familial Adenomatous Polyposis.
FICE	Fujinon Intelligent Color Enhancement.
FIT	Faecal Immunochemical Test .
FOBT	Fecal Occult Blood Test.
FSIG	Flexible Sigmoidoscopy .
GCHP	The Goblet Cell Type of Hyperplastic polyps.
gFOBT	Guaiac Based Fecal Occult Blood Test .
HNPCC	Hereditary NonPolyposis Colorectal Cancer.
HP	Hyperplastic polyp.
HPS	Hyperplastic polyposis Syndrome.
IBD	Inflammatory Bowel Disease .
IRA	Ileo-Rectal Anastomosis.
ISBT	Ileal Sodium Dependent Bile Acid Transporter.
JPS	Juvenile Polyposis Syndrome.
LAER	Laparoscopy-Assisted Endoscopic Resection.
LCM	Laser Confocal Microscopy.
LE	Local Excision .
LS	Lynch Syndrome.
MMR Genes	Mis Match Repair Genes.
MRI	Magnetic Resonance Imaging .
MSI	Micro Satellite Instability.
MSI-H	Microsatellite Instability-High .
MVHP	The Micro Vesicular Type of Hyperplastic polyps.

NBI	Narrow Band Imaging.
NOTES	Natural Orifice Transluminal Endoscopic Surgery.
NSAID	Non Steroidal Anti Inflamatory Drugs .
PJS	Peutz-Jeg hers Syndrome.
PTEN Gene	Phosphate and Tensin Homologue Gene.
RPC/IPAA	Restorative Proctocolectomy with Ileal Pouch Anal Anastomosis.
SA	Serrated Adenoma.
sDNA	Stool DNA.
SNPs	Single Nucleotide Polymorphisms.
SSLs	Sessile Serrated Lesions.
STK 11 Gene	(Serine Threonine Kinase 11) Gene.
TAR	Trans Anal Re-excision.
TEM	Transanal Endoscopic Microsurgery.
TRCPS	Tertiary Referral Colonic Mucosal Resection and Polypectomy Service.
TSAs	Traditional Serrated Adenomas.
VDR	Vitamin D (1, 25(OH) 2D) Receptor.
WHO	World Health Organization.

Introduction

Colonic polyps are protruding space occupying lesions that occur in the lumen of the colon, they are usually restricted to a mucosal overgrowths that can be either malignant or benign. They can occur anywhere in the colon but most commonly in recto-sigmoid region. ***(Hunter et al., 2011)***.

There are several types of colonic polyps: hyperplastic, adenomatous and hamartomatous.

Hyperplastic polyps are usually less than 0.5 cm in diameter; they represent 90% of all epithelial polyps. They mostly occur in rectosigmoid colon but they can occur anywhere. On endoscopy they appear as small round sessile lesions lying astride a mucosal fold. By histopathology, they are composed of well formed glands and crypts lined by non neoplastic epithelial cells. In general, hyperplastic polyps have no malignant potential, but in rare cases polyps with adenomatous foci may undergo malignant transformation. ***(Schoenfeld et al., 2005)***.

Adenomatous polyps are the most common epithelial neoplasm in the colon. They are subdivided into tubular, tubulovillous and villous. They compromise 10% of all colonic polyps. More than 90% are smaller than 1.5 cm in diameter and have a small potential of malignancy. Tubular adenomas are the most common type of the three and can be found any where in the colon. Tubulovillous adenomas are most commonly found in the distal colon and rectum, they are generally larger than the other two types. Villous adenomas are associated with the highest morbidity and mortality rates of all polyps. **(Snover *et al*., 2005).**

Hamartomatous polyps include "Peutz-jegher" syndrome, juvenile polyposis syndrome, "Cowden" syndrome and "Ruvalcaba-Myhre-Smith"

syndrome. The non-inherited polyposis syndromes include "Cronkhite Canada" syndrome and a variety of miscellaneous non familial syndromes. (**Bond, 2000).**

The incidence of appearance of these polyps increase by several factors as age, sex, hereditary factors, obesity and special habits. They occur in any age but usually above the age of 60 . smoking and chronic alcoholic intake also increase the incidence. **(Larsen *et al*., 2005).**

Colonic polyps could be diagnosed by CT scan or MRI by using variety of evolving techniques called computed colonography, virtual colonography or magnifying chromocolonoscopy. **(Pohl *et al*., 2008).**

Other tests are helpful in detecting colonic polyps as sigmoidoscope, stool heme testing, and double contrast barium enema. The best screening method is colonoscopy every 5 years after the age of 50 or 40 with high risk patient. **(Whitlock *et al*., 2008).**

Majority of polyps can be removed colonoscopically which reduces the risk for an invasive neoplasm by 75%- 90%. Colonoscopic removal is a definitive therapy for benign adenomatous polyps or in patients having polyps with carcinoma in situ. **(Society for Surgery of the Alimentary Tract, 2007).**

A follow-up examination within three months is mandatory to confirm the presence or absence of residual or recurrent disease. Additional staging procedures such as CT scanning, endoscopic ultra-sound or endorectal MRI may be helpful. **(Engstrom *et al*., 2007).**

Also, there is a major role for laser photocoagulation in management of colonic polyps as endoscopic argon laser photocoagulation in management of small sessile polyps and Nd: YAG laser photocoagulation in colorectal adenomas. **(Maciel *et al*., 1994).**

Recently, TEM "Transanal Endoscopic Microsurgery" has been proven a safe and effective way to remove polyps from rectum and colon , Patients with small (4 cm in diameter or less), early malignant tumors are candidates for TEM as patients with benign tumors. **(Mc Cloud *et al*., 2006).**

"TEM" covers operative techniques, equipments, oncologic results and an evidence based comparison of TEM and traditional approaches**. (Casadesus, 2009)**.

AIM OF THE WORK

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The goal of this work is to discuss the recent ways of management of colonic polyps according to their types, sites, and behavior.

ANATOMY OF THE COLON

General Consideration:

The colon, so named from the Greek koluein ("to retard"), is a capacious tube described in humans to be somewhere between the short, straight type with a rudimentary cecum, such as that of the carnivores, and a long sacculated colon with a capacious cecum, such as that of the herbivores. The colon roughly surrounds the loops of small intestine as an arch. Its length in the adult is variable, averaging approximately 150 cm, about one fourth the length of the small intestine. Its diameter, which can be substantially augmented by distension, gradually decreases from 7.5 cm at the cecum to 2.5 cm at the sigmoid. **(Landreneau &Fry, 1990).**

Anatomic differences between the small and large intestines include position, caliber, degree of fixation, and, in the colon, the presence of three distinct characteristics: the taeniae coli, the haustra, and the appendices epiploicae. The three taeniae coli, anterior (taenialibera), posteromedial (taenia mesocolica), and posterolateral (taenia omentalis), represent bands of the outer longitudinal coat of muscle that traverse the colon from the base of the appendix to the rectosigmoid junction, where they merge. The muscular longitudinal layer is actually a complete coat around the colon, although it is considerably thicker at the taeniae.(**Gordon ,2001**).

The haustra or haustral sacculations are outpouchings of bowel wall between the taeniae; they are caused by the relative shortness of the taeniae, about one sixth shorter than the length of bowel wall. The haustra are separated by the plicae semilunares or crescentic folds of the bowel wall, which give the colon its characteristic radiographic appearance when filled with air or barium. The appendices epiploicae are small

appendages of fat that protrude from the serosal aspect of the colon.(**Wolf et al.,2006**).

Cecum:

The cecum is the sacculated segment (Latin *caecus*, "blind") of the large bowel that projects downward as a 6 to 8 cm blind pouch below the entrance of the ileum. Usually situated in the right iliac fossa, the cecum is almost entirely, or at least in its lower half, invested with peritoneum. However, its mobility is usually limited by a small mesocecum. The ileum terminates in the posteromedial aspect of the cecum; the angulation between these two structures is maintained by the superior and inferior ileocecal ligaments. These ligaments, along with the mesentery of the appendix, form three pericecal recesses or fossae: superior ileocecal, inferior ileocecal, and retrocecal. Viewed from the cecal lumen, the ileocecal junction is represented by a narrow, transversely situated, slitlike opening known as the ileocecal valve or the valve de Bauhin. At either end, the two prominent semilunar lips of the valve fuse and continue as a single frenulum of mucosa. A circular sphincter, the ileocecal sphincter, originates from a slight thickening of the muscular layer of the terminal ileum. A competent ileocecal valve is related to the critical closed loop type of colonic obstruction. However, ileocecal competence is not always demonstrated on barium enema studies. Instead of preventing reflux of colonic contents into the ileum, the ileocecal valve regulates ileal emptying. The ileocecal sphincter seems to relax in response to the entrance of food into the stomach. As in the gastro esophageal junction, extra sphincteric factors such as the ileocecal angulation apparently have a role in the prevention of reflux from the colon to the ileum. **(Gordon, 2001).**

Appendix:

The vermiform appendix is an elongated diverticulum that arises from the posteromedial aspect of the cecum about 3.0 cm below the ileocecal junction. Its length varies from 2 to 20 cm (mean, 8–10 cm), and it is approximately 5 mm in diameter. The appendix, because of its great mobility, may occupy a variety of positions, possibly at different times in the same individual. It has been estimated that in 85% to 95% of cases, the appendix lies posteromedial on the cecum toward the ileum, but other positions include retrocecal, pelvic, subcecal, pre-ileal and retroileal.The confluence of the three taeniae is a useful guide in locating the base of the appendix. The meso appendix, a triangular fold attached to the posterior leaf of the mesentery of the terminal ileum, usually contains the appendicular vessels close to its free edge. **(Wakeley, 1983)**.

Ascending Colon:

The ascending colon is approximately 15 cm long. It ascends, from the level of the ileocecal junction to the right colic or hepatic flexure, laterally to the psoas muscle and anteriorly to the iliacus, the quadratus lumborum, and the lower pole of the right kidney. The ascending colon is covered with peritoneum anteriorly and on both sides. In addition, fragile adhesions between the right abdominal wall and its anterior aspect, known as Jackson’s membrane, may be present. Like the descending colon on its posterior surface, the ascending colon is devoid of peritoneum, which is instead replaced by an areolar tissue (fascia of Toldt) resulting from an embryologic process of fusion or coalescence of the mesentery to the posterior parietal peritoneum. In the lateral peritoneal reflection, this process is represented by the white line of Toldt, which is more evident at the descending sigmoid junction. This