

Positionspapier Kapselendoskopie des bng

Fachgruppe Kapselendoskopie

PD Dr. Michael Farnbacher, Dr. Horst Hohn, Dr. Michael Philipper

Literatur:

Teil 1: Dünndarm

1. Bandorski D, Irnich W, Brück M et al. Capsule endoscopy and cardiac pacemakers: investigation for possible interference. *Endoscopy* 2008; 40: 36–39
2. Bandorski D, Irnich W, Brück M et al. Do endoscopy capsules interfere with implantable cardioverter-defibrillators? *Endoscopy* 2009; 41: 457–461
3. Bandorski D, Diehl KL, Jaspersen D. Capsule endoscopy in patients with cardiac pacemakers: current situation in Germany. *Z Gastroenterol* 2005; 43: 715–718
4. Leighton JA, Srivathsan K, Carey EJ et al. Safety of wireless capsule endoscopy in patients with implantable cardiac defibrillators. *Am J Gastroenterol* 2005; 100: 1728–1731
5. Leighton JA, Sharma VK, Srivathsan K et al. Safety of capsule endoscopy in patients with pacemakers. *Gastrointest Endosc* 2004; 59: 567–569
6. Dirks MH, Costea F, Seidman EG. Successful video capsule endoscopy in patients with an abdominal cardiac pacemaker. *Endoscopy* 2008; 40: 73–75
7. Dubner S, Dubner Y, Rubio H et al. Electromagnetic interference from wireless video-capsule endoscopy on implantable cardioverter-defibrillators. *Pacing Clin Electrophysiol* 2007; 30: 472–475
8. Holden JP, Dureja P, Pfau PR et al. Endoscopic placement of the small-bowel video capsule by using a capsule endoscope delivery device. *Gastrointest Endosc* 2007; 65: 842–847
9. Carey EJ, Heigh RI, Fleischer DE. Endoscopic capsule endoscope delivery for patients with dysphagia, anatomical abnormalities, or gastroparesis. *Gastrointest Endosc* 2004; 59: 423–426
10. Albert J, Göbel CM, Lesske J et al. Simethicone for small bowel preparation for capsule endoscopy: a systematic, single-blinded, controlled study. *Gastrointest Endosc* 2004; 59: 487–491
11. Ge ZZ, Chen HY, Gao YJ et al. The role of simeticone in small-bowel preparation for capsule endoscopy. *Endoscopy* 2006; 38: 836–840
12. Leung WK, Chan FK, Fung SS et al. Effect of oral erythromycin on gastric and small bowel transit time of capsule endoscopy. *World J Gastroenterol* 2005; 11: 4865–4868
13. Fireman Z, Paz D, Kopelman Y. Capsule endoscopy: improving transit time and image view. *World J Gastroenterol* 2005; 11: 5863–5866
14. Caddy GR, Moran L, Chong AK et al. The effect of erythromycin on video capsule endoscopy intestinal-transit time. *Gastrointest Endosc* 2006; 63: 262–266
15. Niv E, Bonger I, Barkay O et al. Effect of erythromycin on image quality and transit time of capsule endoscopy: a two-center study. *World J Gastroenterol* 2008; 14: 2561–2565
16. Selby W. Complete small-bowel transit in patients undergoing capsule endoscopy: determining factors and improvement with metoclopramide. *Gastrointest Endosc* 2005; 61: 80–85
17. Almeida N, Figueiredo P, Freire P et al. The effect of metoclopramide in capsule enteroscopy. *Dig Dis Sci* 2010; 55: 153–157

18. Apostolopoulos P, Kalantzis C, Gralnek IM et al. Clinical trial: effectiveness of chewing-gum in accelerating capsule endoscopy transit time – a prospective randomized, controlled pilot study. *Aliment Pharmacol Ther* 2008; 28: 405–411
19. Rokkas T, Papaxoinis K, Triantafyllou K et al. Does purgative preparation influence the diagnostic yield of small bowel video capsule endoscopy? A meta-analysis. *Am J Gastroenterol* 2009; 104: 219–227
20. vanTuyl SA, den Ouden H, Stolk MF et al. Optimal preparation for video capsule endoscopy: a prospective, randomized, single-blind study. *Endoscopy* 2007; 39: 1037–1040
21. Kantianis A, Karagiannis S, Liatsos C et al. Comparison of two schemes of small bowel preparation for capsule endoscopy with polyethylene glycol: a prospective, randomized single-blind study. *Eur J Gastroenterol Hepatol* 2009; 21: 1140–1144
22. May A, Albert J, Keuchel M, Moog G, Hartmann D. Kapselendoskopie in der Diagnostik von Dünndarmerkrankungen Update des Positionspapiers der Sektion Endoskopie der DGVS, Stand 07/2010. *Z Gastroenterol* 2010; 48: 1384 – 1404
23. Bandorski D, Stunder D, Höltingen R, Jakobs R, Keuchel M. Kapselendoskopie bei Patienten mit Herzschrittmachern und implantierbaren Cardioverter-Defibrillatoren - Ist die formale Kontraindikation noch gerechtfertigt? *Z Gastroenterol* 2013 Aug. 51(8):747-52.

Teil 1: Dünndarm – Indikation Obskure gastrointestinale Blutung

1. May A, Albert J, Keuchel M, Moog G, Hartmann D. Kapselendoskopie in der Diagnostik von Dünndarmerkrankungen Update des Positionspapiers der Sektion Endoskopie der DGVS, Stand 07/2010. *Z Gastroenterol* 2010; 48: 1384 – 1404
2. Mergener K, Ponchon T, Gralnek I, Pennazio M, Gay G, Selby W, Seidman EG, Cellier C, Murray J, de Franchis R, Rösch T, Lewis BS. Literature review and recommendations for clinical application of small-bowel capsule endoscopy, based on a panel discussion by international experts. *Endoscopy* 2007;39:895-909.
3. Ladas SD, Triantafyllou K, Spada C, Riccioni ME et al. European Society of Gastrointestinal Endoscopy (ESGE): Recommendations (2009) on clinical use of video capsule endoscopy to investigate small-bowel, esophageal and colonic diseases. *Endoscopy* 2010;42:220-227
4. D. Hartmann, Kapsel-Update 2013, *Endoskopie heute* 2013;26:180-183
5. Matsumura T, Arai M, Sato T et al. Efficacy of computed image modification of capsule endoscopy in patients with obscure gastrointestinal bleeding. *World J Gastrointest Endosc* 2012; 4: 421 – 428
6. Yamada A, Watabe H, Kobayashi Y et al. Timing of capsule endoscopy influences the diagnosis and outcome in obscure overt gastrointestinal bleeding. *Hepatogastroenterology* 2012; 59: 676 – 679
7. Lepileur L, Dray X, Antonietti M et al. Factors associated with diagnosis of obscure gastrointestinal bleeding by video capsule enteroscopy. *Clin Gastroenterol Hepatol* 2012; 10: 1376 – 1380
8. Tong J, Svarta S, Ou Getal. Diagnostic yield of capsule endoscopy in the setting of iron deficiency anemia without evidence of gastrointestinal bleeding. *Can J Gastroenterol* 2012; 26 (10): 687 – 690
9. Koulaouzidis A, Rondonotti E, Giannakou A et al. Diagnostic yield of small-bowel capsule endoscopy in patients with iron-deficiency anemia: a systematic review. *Gastrointest Endosc* 2012; 76: 983 – 992
10. Leung WK, Ho SS, Suen BY et al. Capsule endoscopy or angiography in patients with acute overt obscure gastrointestinal bleeding: a prospective randomized

- study with long-term follow-up. *Am J Gastroenterol* 2012; 107: 1370 – 1376
11. Leclaire S, Iwanicki-Caron I, Di-Fiore A et al. Yield and impact of emergency capsule enteroscopy in severe obscure-overt gastrointestinal bleeding. *Endoscopy* 2012; 44: 337 – 342
 12. Gralnek IM, Ching JY, Maza I et al. Capsule endoscopy in acute upper gastrointestinal hemorrhage: a prospective cohort study. *Endoscopy*. 2013 Jan;45(1):12-9. Epub 2012 Dec 19.
 13. Shishido T, Oka S, Tanaka S et al. Diagnostic yield of capsule endoscopy vs. double-balloon endoscopy for patients who have undergone total enteroscopy with obscure gastrointestinal bleeding. *Hepatogastroenterology* 2012; 59: 955 – 959
 14. Apostolopoulos P, Kalantzis C, Gralnek IM et al. Clinical trial: effectiveness of chewing-gum in accelerating capsule endoscopy transit time – a prospective randomized, controlled pilot study. *Aliment Pharmacol Ther* 2008; 28: 405–411
 15. Tragende Gründe zum GBA Beschluss vom 11. November 2010
http://www.gba.de/downloads/40-268-1449/2010-11-11_MVV-RL-Kapselendoskopie_ZD.pdf (A-2.1)

Teil 1: Dünndarm – Indikation Chronisch-entzündliche Darmerkrankungen

16. Albert JG. Update Kapselendoskopie – Einsatz bei Morbus Crohn. *Endoskopie heute* 2013;26: 184-187
17. Dionisio PM, Gurudu SR, Leighton JA et al. Capsule endoscopy has a significantly higher diagnostic yield in patients with suspected and established small-bowel Crohn’s disease: a meta-analysis. *Am J Gastroenterol* 2010; 105: 1240 – 1248 quiz 1249
18. Yadav A, Heigh RI, Hara AK et al. Performance of the patency capsule compared with nonenteroclysis radiologic examinations in patients with known or suspected intestinal strictures. *Gastrointest Endosc* 2011; 74: 834 – 839
19. Herrerias JM, Leighton JA, Costamagna G et al. Agile patency system eliminates risk of capsule retention in patients with known intestinal strictures who undergo capsule endoscopy. *Gastrointest Endosc* 2008; 67: 902 – 909
20. Doherty GA, Moss AC, Cheifetz AS. Capsule endoscopy in suspected Crohn’s disease: “yield” does not equal “diagnosis”. *Am J Gastroenterol* 2010; 105: 2111 author reply 2011-2012
21. Albert JG, Martiny F, Krummenerl A et al. Diagnosis of small bowel Crohn’s disease: a prospective comparison of capsule endoscopy with magnetic resonance imaging and fluoroscopic enteroclysis. *Gut* 2005; 54: 1721 – 1727
22. Jensen MD, Nathan T, Rafaelsen SR et al. Diagnostic accuracy of capsule endoscopy for small bowel Crohn’s disease is superior to that of MR enterography or CT enterography. *Clin Gastroenterol Hepatol* 2011; 9: 124 – 129
23. Bourreille A, Ignjatovic A, Aabakken L et al. Role of small-bowel endoscopy in the management of patients with inflammatory bowel disease: an international OMED-ECCO consensus. *Endoscopy* 2009; 41: 618 – 637
24. Maunoury V, Savoye G, Bourreille A et al. Value of wireless capsule endoscopy in patients with indeterminate colitis (inflammatory bowel disease type unclassified). *Inflamm Bowel Dis* 2007; 13: 152 – 155
25. Lopes S, Figueiredo P, Portela F et al. Capsule endoscopy in inflammatory bowel disease type unclassified and indeterminate colitis serologically negative. *Inflamm Bowel Dis* 2010; 16: 1663 – 1668
26. Murrell Z, Vasiliauskas E, Melmed G et al. Preoperative wireless capsule endoscopy does not predict outcome after ileal pouch-anal anastomosis. *Dis*

Colon Rectum 2010; 53: 293 – 300

27. Adler SN, Yoav M, Eitan S et al. Does capsule endoscopy have an added value in patients with perianal disease and a negative work up for Crohn's disease? *World J Gastrointest Endosc* 2012; 4: 185 – 188
28. Wiarda B, Stolk MFJ, Heine D et al. Patient Burden and Patient Preference: Comparing Magnetic Resonance Enteroclysis, Capsule Endoscopy and Balloon-Assisted Enteroscopy. *J Gastroenterol Hepatol* 2013; 28: 464 – 471
29. Koulaouzidis A, Douglas S, Rogers MA et al. Fecal calprotectin: a selection tool for small bowel capsule endoscopy in suspected IBD with prior negative bi-directional endoscopy. *Scand J Gastroenterol* 2011; 46: 561 – 566
30. Jensen MD, Kjeldsen J, Nathan T. Fecal calprotectin is equally sensitive in Crohn's disease affecting the small bowel and colon. *Scand J Gastroenterol* 2011; 46: 694 – 700
31. Sipponen T, Haapamaki J, Savilahti E et al. Fecal calprotectin and S100A12 have low utility in prediction of small bowel Crohn's disease detected by wireless capsule endoscopy. *Scand J Gastroenterol* 2012; 47: 778 – 784
32. Fritscher-Ravens A, Scherbakov P, Bufler P et al. The feasibility of wireless capsule endoscopy in detecting small intestinal pathology in children under the age of 8 years: a multicentre European study. *Gut* 2009; 58: 1467 – 1472
33. Di Nardo G, Oliva S, Ferrari F et al. Usefulness of wireless capsule endoscopy in paediatric inflammatory bowel disease. *Dig Liver Dis* 2011; 43: 220 – 224
34. Cohen SA, Gralnek IM, Ephrath H et al. The use of a patency capsule in pediatric Crohn's disease: a prospective evaluation. *Dig Dis Sci* 2011; 56: 860 – 865
35. Nuutinen H, Kolho K, Salminen P et al. Capsule endoscopy in pediatric patients: Technique and results in our first 100 consecutive children. *Scand J Gastroenterol* 2011; 46: 1138 – 1143
36. Casciani E, Masselli G, Di Nardo G et al. MR enterography versus capsule endoscopy in paediatric patients with suspected Crohn's disease. *Eur Radiol* 2011; 21: 823 – 831
37. Stuart S, Conner T, Ahmed A et al. The smaller bowel: imaging the small bowel in paediatric Crohn's disease. *Postgrad Med J* 2011; 87: 288
38. Golder SK, Schreyer AG, Endlicher E et al. Comparison of capsule endoscopy and magnetic resonance (MR) enteroclysis in suspected small bowel disease. *Int J Colorectal Dis* 2006; 21: 97 – 104
39. Dussault C, Gower-Rousseau C, Salleron J et al. Small bowel capsule endoscopy for management of Crohn's disease: A retrospective tertiary care centre experience. *Dig Liver Dis* 2013; 45: 558 – 561
40. van Tuyl SAC, van Noorden JT, Stolk MFJ, Kuipers EJ. Clinical consequences of videocapsule endoscopy in GI bleeding and Crohn's disease. *Gastrointest Endosc* 2007; 66: 1164 – 1170
41. O'Donnell S, Qasim A, Ryan BM et al. The role of capsule endoscopy in small bowel Crohn's disease. *J Crohns Colitis* 2009; 3: 282 – 286
42. Gralnek IM, Cohen SA, Ephrath H et al. Small bowel capsule endoscopy impacts diagnosis and management of pediatric inflammatory bowel disease: a prospective study. *Dig Dis Sci* 2012; 57: 465 – 471
43. Tukey M, Pleskow D, Legnani P et al. The utility of capsule endoscopy in patients with suspected Crohn's disease. *Am J Gastroenterol* 2009; 104: 2734 – 2739
44. Sidhu R, Brunt LK, Morley SR et al. Undisclosed use of nonsteroidal antiinflammatory drugs may underlie small-bowel injury observed by capsule endoscopy. *Clin Gastroenterol Hepatol* 2010; 8: 992 – 995
45. Sidhu R, Sanders DS, Wilson P et al. Faecal lactoferrin, capsule endoscopy and Crohn's disease. Is there a three way relationship? A pilot study. *J Gastrointestin*

Liver Dis 2010; 19: 257 – 260

46. Niv Y, Ilani S, Levi Z et al. Validation of the Capsule Endoscopy Crohn's Disease Activity Index (CECDAI or Niv score): a multicenter prospective study. *Endoscopy* 2012; 44: 21 – 26
47. Rosa B, Moreira MJ, Rebelo A et al. Lewis Score: a useful clinical tool for patients with suspected Crohn's Disease submitted to capsule endoscopy. *J Crohns Colitis* 2012; 6: 692 – 697
48. Gralnek IM, Defranchis R, Seidman E et al. Development of a capsule endoscopy scoring index for small bowel mucosal inflammatory change. *Aliment Pharmacol Ther* 2008; 27: 146 – 154
49. Sung J, Ho KY, Chiu HM et al. The use of Pillcam Colon in assessing mucosal inflammation in ulcerative colitis: a multicenter study. *Endoscopy* 2012; 44: 754 – 758
50. Ye CA, Gao YJ, Ge ZZ et al. PillCam COLON capsule endoscopy versus conventional colonoscopy for the detection of the severity and extent of ulcerative colitis. *J Dig Dis* 2012; DOI: doi: 10.1111/1751-2980.12005
51. Acosta MSJ, Cuesta AB, Álvarez AC et al. Pillcam Colon (C2) vs. Colonoscopy in the Assessment of Colon Mucosa in Patients with Ulcerative Colitis. *Endoscopy* 2012; 44: A126
52. Heinzow HS, Lügering A, Domagk D et al. Assessing Disease Activity of Ulcerative Colitis with Colon Capsule Endoscopy versus Standard Colonoscopy. *Gut* 2012; 61: A27
53. May A, Albert J, Keuchel M, Moog G, Hartmann D. Kapselendoskopie in der Diagnostik von Dünndarmerkrankungen Update des Positionspapiers der Sektion Endoskopie der DGVS, Stand 07/2010. *Z Gastroenterol* 2010; 48: 1384 – 1404
54. Efthymiou A, Viazis N, Mantzaris G et al. Does clinical response correlate with mucosal healing in patients with Crohn's disease of the small bowel? A prospective, case-series study using wireless capsule endoscopy. *Inflamm Bowel Dis* 2008; 14: 1542–1547
55. Mehdizadeh S, Chen G, Enayati PJ et al. Diagnostic yield of capsule endoscopy in ulcerative colitis and inflammatory bowel disease of unclassified type (IBDU). *Endoscopy* 2008; 40: 30–35
56. Regueiro M, Schraut W, Baidoo L et al. Infliximab prevents Crohn's disease recurrence after ileal resection. *Gastroenterology* 2009; 136: 441–450.e1 quiz 716
57. Ladas SD, Triantafyllou K, Spada C, Riccioni ME et al. European Society of Gastrointestinal Endoscopy (ESGE): Recommendations (2009) on clinical use of video capsule endoscopy to investigate small-bowel, esophageal and colonic diseases. *Endoscopy* 2010;42:220-227

Teil 1: Dünndarm – Indikation Überwachung von erblichen Polyposis-Syndromen

58. Goldstein SA, Hoffenberg EJ., Peutz-Jegher syndrome in childhood: need for updated recommendations?, *J Pediatr Gastroenterol Nutr.* 2013 Feb;56(2):191-5.
59. Gastineau S et alii: Contribution of capsule endoscopy to Peutz-Jeghers syndrome management in children, *Dig Liver Dis.* 2012 Oct;44(10):839-43.
60. Koornstra JJ., Small bowel endoscopy in familial adenomatous polyposis, *Best Pract Res Clin Gastroenterol.* 2012 Jun;26(3):359-68.
61. van Lier MG, Wagner A, Mathus-Vliegen EM, et al. High cancer risk in Peutz-Jeghers syndrome: a systematic review and surveillance recommendations. *Am J Gastroenterol* 2010;105:1258–64.

62. Vidal I, Podevin G, Piloquet H, et al. Follow-up and surgical management of Peutz-Jeghers syndrome in children. *J Pediatr Gastroenterol Nutr* 2009;48:419–25.
63. Hemminki A, Markie D, Tomlinson I, et al. A serine/threonine kinase gene defective in Peutz-Jeghers syndrome. *Nature* 1998;391:184–7.
64. Jenne DE, Reimann H, Nezu J, et al. Peutz-Jeghers syndrome is caused by mutations in a novel serine threonine kinase. *Nat Genet* 1998;18:38–43.
65. Hezel AF, Bardeesy N. LKB1; linking cell structure and tumor suppression. *Oncogene* 2008;27:6908–19.
66. Volikos E, Robinson J, Aittomaki K, et al. LKB1 exon I and whole gene deletions are a common cause of Peutz-Jeghers syndrome. *J Med Genet* 2006;43:e18.
67. Beggs AD, Latchford AR, Vasen HF, et al. Peutz-Jeghers syndrome: a systematic review and recommendations for management. *Gut* 2010; 59:975 – 86.
68. van Lier MG, Mathus-Vliegen EM, Wagner A, et al. High cumulative risk of intussusception in patients with Peutz-Jeghers syndrome: time to update surveillance guidelines? *Am J Gastroenterol* 2011;106:940–5.
69. Lynch HT, Lynch JF, Lynch PM, et al. Hereditary colorectal cancer syndromes: molecular genetics, genetic counseling, diagnosis and management. *Fam Cancer* 2008;7:27–39.
70. Jasperson KW, Tuohy TM, Neklason DW, et al. Hereditary and familial colon cancer. *Gastroenterology* 2010;138:2044–58.
71. Giardiello FM, Trimbath JD. Peutz-Jeghers syndrome and management recommendations. *Clin Gastroenterol Hepatol* 2006;4:408–15.
72. Dunlop MG. Guidance on gastrointestinal surveillance for hereditary non-polyposis colorectal cancer, familial adenomatous polyposis, juvenile polyposis, and Peutz-Jeghers syndrome. *Gut* 2002;51(Suppl 5): V21–7.
73. Hemminki A. The molecular basis and clinical aspects of Peutz-Jeghers syndrome. *Cell Mol Life Sci* 1999;55:735–50.
74. Amos CI, Keitheri-Cheteri MB, Sabripour M, et al. Genotype-phenotype correlations in Peutz-Jeghers syndrome. *J Med Genet* 2004;41: 327 – 33.
75. Gammon A, Jasperson K, Kohlmann W, et al. Hamartomatous polyposis syndromes. *Best Pract Res Clin Gastroenterol* 2009;23:219–31.
76. Hinds R, Philp C, Hyer W, et al. Complications of childhood Peutz-Jeghers syndrome: implications for pediatric screening. *J Pediatr Gastroenterol Nutr* 2004;39:219–20.
77. Oncel M, Remzi FH, Church JM, et al. Benefits of 'clean sweep' in Peutz-Jeghers patients. *Colorectal Dis* 2004;6:332–5.
78. Howell L, Bader A, Mullassery D, et al. Sertoli Leydig cell ovarian tumour and gastric polyps as presenting features of Peutz-Jeghers syndrome. *Pediatr Blood Cancer* 2010;55:206–7.
79. Massa G, Roggen N, Renard M, et al. Germline mutation in the STK11 gene in a girl with an ovarian Sertoli cell tumour. *Eur J Pediatr* 2007;166:1083 – 5.
80. Rabeneck L, Paszat LF, Hilsden RJ, et al. Bleeding and perforation after outpatient colonoscopy and their risk factors in usual clinical practice. *Gastroenterology* 2008;135:1899–906.
81. Salloch H, Reinacher-Schick A, Schulmann K, et al. Truncating mutations in Peutz-Jeghers syndrome are associated with more polyps, surgical interventions and cancers. *Int J Colorectal Dis* 2010;25:97– 107.
82. Hearle N, Schumacher V, Menko FH, et al. Frequency and spectrum of cancers in the Peutz-Jeghers syndrome. *Clin Cancer Res* 2006;12: 3209 – 15.
83. Hearle N, Schumacher V, Menko FH, et al. STK11 status and intussusception risk in Peutz-Jeghers syndrome. *J Med Genet* 2006;43:e41.

84. Postgate A, Hyer W, Phillips R, et al. Feasibility of video capsule endoscopy in the management of children with Peutz-Jeghers syndrome: a blinded comparison with barium enterography for the detection of small bowel polyps. *J Pediatr Gastroenterol Nutr* 2009;49:417
85. Caspari R, von Falkenhausen M, Krautmacher C, et al. Comparison of capsule endoscopy and magnetic resonance imaging for the detection of polyps of the small intestine in patients with familial adenomatous polyposis or with Peutz-Jeghers' syndrome. *Endoscopy* 2004;36:1054 – 9.
86. Hsu TC, Lee TC, Chiu HM, et al. Radical endoscopic polypectomy combined with double-balloon enteroscopy and colonoscopy for Peutz-Jeghers syndrome. *J Pediatr Gastroenterol Nutr* 2010;51:370 – 2.
87. Riemann JF, Hartmann D, Schilling D et al, Frequency of SB Polyps in Patients with Duodenal Adenoma (non-FAP), *Z. Gastroenterologie* 2006;44:235-238.
88. May A, Albert J, Keuchel M, Moog G, Hartmann D. Kapselendoskopie in der Diagnostik von Dünndarmerkrankungen Update des Positionspapiers der Sektion Endoskopie der DGVS, Stand 07/2010. *Z Gastroenterol* 2010; 48: 1384 – 1404
89. Ladas SD, Triantafyllou K, Spada C, Riccioni ME et al. European Society of Gastrointestinal Endoscopy (ESGE): Recommendations (2009) on clinical use of video capsule endoscopy to investigate small-bowel, esophageal and colonic diseases. *Endoscopy* 2010;42:220-227

Teil 1: Dünndarm – Indikation Sprue

90. Rubio-Tapia A., Hill ID, Kelly CP, Calderwood AH, Murray JA, ACG Clinical Guidelines: Diagnosis and Management of Celiac Disease, *Am J Gastroenterol* 2013; 108:656–676; doi:10.1038/ajg.2013.79
91. Kurppa K, Salminen J, Ukkola A et al. Utility of the new ESPGHAN criteria for the diagnosis of celiac disease in at-risk groups. *J Pediatr Gastroenterol Nutr* 2012;54:387–91.
92. Iddan G, Meron G, Glukhovskiy A et al. Wireless capsule endoscopy. *Nature* 2000;405:417.
93. Tennyson CA, Ciaccio EJ, Lewis SK. Video capsule endoscopy in celiac disease. *Gastrointest Endosc Clin N Am* 2012;22:747–58.
94. Chang MS, Rubin M, Lewis SK et al. Diagnosing celiac disease by video capsule endoscopy (VCE) when esophogastroduodenoscopy (EGD) and biopsy is unable to provide a diagnosis: a case series. *BMC Gastroenterol* 2012;12:90.
95. Rokkas T, Niv Y. The role of video capsule endoscopy in the diagnosis of celiac disease: a meta-analysis. *Eur J Gastroenterol Hepatol* 2012;24:303–8.
96. Murray JA, Rubio-Tapia A, Van Dyke CT et al. Mucosal atrophy in celiac disease: extent of involvement, correlation with clinical presentation, and response to treatment. *Clin Gastroenterol Hepatol* 2008;6:186–93.
97. Lidums I, Cummins AG, Teo E. The role of capsule endoscopy in suspected celiac disease patients with positive celiac serology. *Dig Dis Sci* 2011;56:499–505.
98. Barret M, Malamut G, Rahmi G et al. Diagnostic yield of capsule endoscopy in refractory celiac disease. *Am J Gastroenterol* 2012;107:1546–53.
99. Culliford A, Daly J, Diamond B et al. The value of wireless capsule endoscopy in patients with complicated celiac disease. *Gastrointest Endosc* 2005;62:55–61.
100. Atlas DS, Rubio-Tapia A, Van Dyke CT et al. Capsule endoscopy in nonresponsive celiac disease. *Gastrointest Endosc* 2011;74:1315–22.

Teil 1: Dünndarm – Indikation Einsatz bei Kindern

1. Fritscher-Ravens A, Scherbakov P, Bufler P et al. The feasibility of wireless capsule endoscopy in detecting small intestinal pathology in children under the age of 8 years: a multicentre European study. *Gut* 2009; 58: 1467 – 1472
2. Atay O, Mahajan L, Kay M et al. Risk of capsule endoscope retention in pediatric patients: a large single-center experience and review of the literature. *J Pediatr Gastroenterol Nutr.* 2009 Aug;49(2):196-201
3. Antao B, Bishop J, Shawis R et al. Clinical application and diagnostic yield of wireless capsule endoscopy in children. *J Laparoendosc Adv Surg Tech A* 2007; 17: 364–370
4. Thomson M, Fritscher-Ravens A, Mylonaki M et al. Wireless capsule endoscopy in children: a study to assess diagnostic yield in small bowel disease in paediatric patients. *J Pediatr Gastroenterol Nutr* 2007; 44: 192–197
5. Di Nardo G, Oliva S, Ferrari F et al. Usefulness of wireless capsule endoscopy in paediatric inflammatory bowel disease. *Dig Liver Dis* 2011; 43: 220 – 224
6. Cohen SA, Gralnek IM, Ephrath H et al. The use of a patency capsule in pediatric Crohn's disease: a prospective evaluation. *Dig Dis Sci* 2011; 56: 860 – 865
7. Nuutinen H, Kolho K, Salminen P et al. Capsule endoscopy in pediatric patients: Technique and results in our first 100 consecutive children. *Scand J Gastroenterol* 2011; 46: 1138 – 1143
8. Casciani E, Masselli G, Di Nardo G et al. MR enterography versus capsule endoscopy in paediatric patients with suspected Crohn's disease. *Eur Radiol* 2011; 21: 823 – 831
9. Stuart S, Conner T, Ahmed A et al. The smaller bowel: imaging the small bowel in paediatric Crohn's disease. *Postgrad Med J* 2011; 87: 288
10. May A, Albert J, Keuchel M, Moog G, Hartmann D. Kapselendoskopie in der Diagnostik von Dünndarmerkrankungen Update des Positionspapiers der Sektion Endoskopie der DGVS, Stand 07/2010. *Z Gastroenterol* 2010; 48: 1384 – 1404

Teil 2: Kolon

101. Bandorski D, Irnich W, Brück M et al. Capsule endoscopy and cardiac pacemakers: investigation for possible interference. *Endoscopy* 2008; 40: 36–39
102. Bandorski D, Irnich W, Brück M et al. Do endoscopy capsules interfere with implantable cardioverter-defibrillators? *Endoscopy* 2009; 41: 457–461
103. Bandorski D, Diehl KL, Jaspersen D. Capsule endoscopy in patients with cardiac pacemakers: current situation in Germany. *Z Gastroenterol* 2005; 43: 715–718
104. Leighton JA, Srivathsan K, Carey EJ et al. Safety of wireless capsule endoscopy in patients with implantable cardiac defibrillators. *Am J Gastroenterol* 2005; 100: 1728–1731
105. Leighton JA, Sharma VK, Srivathsan K et al. Safety of capsule endoscopy in patients with pacemakers. *Gastrointest Endosc* 2004; 59: 567–569

106. DirksMH, CosteaF, SeidmanEG. Successful videocapsule endoscopy in patients with an abdominal cardiac pacemaker. *Endoscopy* 2008; 40: 73–75
107. Dubner S, Dubner Y, Rubio H et al. Electromagnetic interference from wireless video-capsule endoscopy on implantable cardioverter-defibrillators. *Pacing Clin Electrophysiol* 2007; 30: 472–475
108. Schneider M, Charton JP, Neuhaus H. Kapselendoskopie des Kolons – Update 2013. *Endoskopie heute* 2013;26: 192-195.
109. Van Gossum A, Munoz-Navas M, Fernandez-Urien I, et al. Capsule Endoscopy versus Colonoscopy for the Detection of Polyps and Cancer. *N Engl J Med* 2009; 361: 264-70.
110. Sieg A. Colon capsule endoscopy compared with conventional endoscopy for the detection of colorectal neoplasms. *Expert Rev Med Devices* 2011; 8(2): 257-61
111. Spada C et al. Literature Review and Recommendations for Clinical Application of Colon Capsule Endoscopy. *Dig. Liver Dis.* 2012; 43(4): 251-8.
112. Hartmann et al. A pilot study evaluating a new low-volume colon cleansing procedure for capsule colonoscopy. *Endoscopy* 2012; 44(5): 482-6.
113. Leighton JA, Rex DK. A grading scale to evaluate colon cleansing for the PillCam COLON capsule: a reliability study. *Endoscopy* 2011; 43: 123-27
114. Spada et al. Colon capsule endoscopy: European Society of Gastrointestinal Endoscopy (ESGE) Guideline. *Endoscopy* 2012; 44: 527-536
115. Eliakim et al. Prospective multicenter performance evaluation of the second-generation colon capsule compared with colonoscopy. *Endoscopy* 2009; 41(12): 1026-31
116. Spada C, Hassan C, Munoz-Navas M, et al. Second-generation colon capsule endoscopy compared with colonoscopy. *Gastrointest Endosc* 2011; 74: 581-89
117. Rex DK et al. Accuracy of Pillcam COLON 2 for Detecting Subjects with Adenomas > 6mm. *Gastroenterol* 2013; 144(5): Suppl. AB 907
118. Spada C et al. Flat Colorectal Lesions at PillCam Colon Capsule Endoscopy (CCE). *GIE* 2013; Volume 77, Issue 5: Suppl. AB 496-7
119. Pioche, M. et al. Prospective multicenter evaluation of colon capsule examination indicated by colonoscopy failure or anesthesia contraindication. *Endoscopy* (2012); 44: 911–6.
120. Triantafyllou K et al. Colon capsule endoscopy is feasible to perform after incomplete colonoscopy and guides further work-up in clinical practice. *Gastrointest Endosc* 2014; 79(2): 307-16
121. Negreanu L et al. Pillcam Colon 2 capsule in patients unable or unwilling to undergo colonoscopy. *World J Gastrointest Endosc* 2013; 5(11): 559-567.
122. Alarcon-Hernandez O et al. Effects of Colon Capsule Endoscopy on Medical Decision Making in Patients with Incomplete Colonoscopies. *Clin Gastroenterol Hepatol* 2013; 11: 534-540
123. Spada et al. Colon Capsule Endoscopy versus CT Colonography in the Evaluation of Patients with incomplete traditional colonoscopy: A prospective comparative Trial. *UEGJ* 2013; 1, 1(S): A126-7 (OP 431)
124. Rondonotti E et al. Accuracy of Capsule Colonoscopy and Computed Tomographic Colonography in Individuals with Positive Fecal Occult Blood Test. *Clin Gastroenterol Hepatol* 2014; Jan 5 pii: S1542-3565 (14) 00003-2.
125. Sung, J. et al. The use of Pillcam Colon in assessing mucosal inflammation in ulcerative colitis: a multicenter study. *Endoscopy* 44, 754–8 (2012).
126. Ye, C. A. et al. PillCam colon capsule endoscopy versus conventional colonoscopy for the detection of severity and extent of ulcerative colitis. *Journal of digestive diseases* 14, 117–24 (2013).

127. Meister, T. et al. Colon capsule endoscopy versus standard colonoscopy in assessing disease activity of ulcerative colitis: a prospective trial. *Techniques in coloproctology* (2013), e-pub ahead of print; DOI 10.1007/s10151-012-0965-8.
128. Hosoe, N. et al. Applicability of second-generation colon capsule endoscope to ulcerative colitis: A clinical feasibility study. *Journal of gastroenterology and hepatology* 28, 1174–9 (2013).
129. Acosta M, Cuesta AB, Álvarez AC, Laria, Arias, Rodríguez, Barroso, Vázquez, Herrerías Gutiérrez. Pillcam Colon (C2) Vs Colonoscopy In The Assessment Of Colon Mucosa In Patients With Ulcerative Colitis (Preliminary Study). *Endoscopy*. 2012; 44: A126.
130. Hassan C, Zullo A, Winn S, Morini S. Cost-effectiveness of capsule endoscopy in screening for colorectal cancer. *Endoscopy*. 2008;40:414-421.
131. Krause HH, Riemann JF. Patientenerfahrungen mit der konventionellen und der Kapselkoloskopie – ein Beitrag der Versorgungsforschung zur Verbesserung der Akzeptanz der Darmkrebsvorsorgeforschung. *Endheut* 2013; 26: 196-200.
132. Denters MJ et al. Patient burden of colonoscopy after positive fecal immunochemical testing for colorectal cancer screening. *Endoscopy* 2013; 45(5): 342-9.
133. Groth S, Krause H, Behrendt R, et al. Capsule colonoscopy increases uptake of colorectal cancer screening: *BMC Gastroenterology* 2012; 12: 80
134. Saurin JC et al. French Multicentric Experience of Colon Capsule Endoscopy in Real Practice : Primary Results of the Colon Capsule Endoscopy Observatory "ONECC"; *GI Endoscopy* 2013: 77(5) supp AB TU1316