



## BÖLÜM 24

# LAPAROSKOPİ KOMPLİKASYONLARINA GENEL BAKIŞ

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### 1. GİRİŞ:

Ameliyatın kendisinden bağımsız olarak, sadece laparoskopi tekniğinden kaynaklanan komplikasyonların oranı oldukça düşüktür. Laparoskopik komplikasyonların yaklaşık yarısı kamera ve port girişleri esnasında gerçekleşir. <sup>1</sup>Bunun yanı sıra insuflasyon aşamasında, doku diseksiyonu yaparken veya kanama kontrolü sağlamaya çalışırken komplikasyonlar görülebilir. <sup>2</sup> Komplikasyonun intraoperatif olarak fark edilmesi durumunda bazen laparotomiye geçmek gerekebilirken, bazı komplikasyonlar ise ancak postoperatif dönemde fark edilebilir. Bağırsak perforasyonları ve damar yaralanmaları laparoskopik cerrahiye bağlı morbidite ve mortalitenin en önemli sebebidir.

Abdominal giriş esnasında komplikasyon insidansı %1'den azdır. <sup>3,4,5,6</sup> Chandler ve arkadaşlarının 280.000 laparoskopik işlemi taradığı çalışmaya göre, abdominal giriş esnasında yaralanma riski 10.000'de 5-30 arasındadır. Abdominal giriş sırasında yaralanmalar sırasıyla ince bağırsak (%25), iliak arter(%19), kolon(%12),

iliak veya diğer retroperitoneal venler (%9), mezenterik arterin dalları(%7), aort(%6), inferior vena kava(%4), abdominal duvar damarları (%4), mesane(%3), karaciğer(%2) şeklindedir. <sup>7</sup>

Bhoyrul ve arkadaşlarının Amerikan Gıda ve İlaç Dairesi kayıtlarından taradığı 3 yıllık verilere göre 629 trokar yaralanmasının, 408'i büyük damar yaralanması, 182'si diğer organ yaralanmaları (özellikle bağırsak), 30'u ise batin duvarında hematoma şeklindedir. Bu yaralanmaların 32'si ölümlü sonuçlanmıştır. Ölümlü sonuçlanan 32 hastadan 26'sında damar yaralanması, 6'sında bağırsak yaralanması izlenmiştir. <sup>8</sup>

### 2. RİSK FAKTÖRLERİ :

- Geçirilmiş abdominal cerrahi öyküsü,
- Divertikülit,
- Pelvik inflamatuvar hastalık öyküsü
- Bağırsak distansiyonu,
- Büyük pelvik ya da abdominal kitleler

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- Laparoskopinin komplikasyonları bilinmeli ve bu komplikasyonların gelişmemesi için uygun prosedürler takip edilmeli, komplikasyon geliştiği takdirde de hızla karar verilerek doğru şekilde yönetilmelidir.

## KAYNAKLAR

1. Magrina, J. F. Complications of Laparoscopic Surgery. *Clin. Obstet. Gynecol.* **45**, 469–480 (2002).
2. Trottier, D. C., Martel, G. & Boushey, R. P. Complications in laparoscopic intestinal surgery: prevention and management. *Minerva Chir.* **64**, 339–354 (2009).
3. Molloy, D., Kaloo, P. D., Cooper, M. & Nguyen, T. V. Laparoscopic entry: a literature review and analysis of techniques and complications of primary port entry. *Aust. N. Z. J. Obstet. Gynaecol.* **42**, 246–254 (2002).
4. Jiang, X., Anderson, C. & Schnatz, P. F. The Safety of Direct Trocar Versus Veress Needle for Laparoscopic Entry: A Meta-Analysis of Randomized Clinical Trials. *J. Laparoendosc. Adv. Surg. Tech.* **22**, 362–370 (2012).
5. Ahmad, G., Baker, J., Finnerty, J., Phillips, K. & Watson, A. Laparoscopic entry techniques. *Cochrane Database Syst. Rev.* (2019) doi:10.1002/14651858.CD006583.pub5.
6. Kirchhoff, P., Dincler, S. & Buchmann, P. A Multivariate Analysis of Potential Risk Factors for Intra- and Postoperative Complications in 1316 Elective Laparoscopic Colorectal Procedures. *Ann. Surg.* **248**, 259–265 (2008).
7. Chandler, J. G., Corson, S. L. & Way, L. W. Three spectra of laparoscopic entry access injuries11Competing Interests: Drs Chandler and Way are paid consultants to InnerDyne, Inc, and Drs Corson and Way are paid consultants to United States Surgical Corp, which have both become part of the Health Care Division of Tyco, Ltd. Dr Corson is also a paid consultant to Circon Corp and has royalty interests in its ACMI division's fluid monitoring device used for hysteroscopic procedures. *J. Am. Coll. Surg.* **192**, 478–490 (2001).
8. Bhojru, S., Vierra, M. A., Nezhat, C. R., Krummel, T. M. & Way, L. W. Trocar injuries in laparoscopic surgery1 1No competing interests declared. *J. Am. Coll. Surg.* **192**, 677–683 (2001).
9. Fuller, J., Ashar, B. S. & Carey-Corrado, J. Trocar-associated injuries and fatalities: An analysis of 1399 reports to the FDA. *J. Minim. Invasive Gynecol.* **12**, 302–307 (2005).
10. Sigman, H. H. et al. Risks of blind versus open approach to celiotomy for laparoscopic surgery. *Surg. Laparosc. Endosc.* **3**, 296–299 (1993).
11. Chapron, C. M. et al. Major vascular injuries during gynecologic laparoscopy. *J. Am. Coll. Surg.* **185**, 461–465 (1997).
12. Sandadi, S. et al. Recognition and Management of Major Vessel Injury during Laparoscopy. *J. Minim. Invasive Gynecol.* **17**, 692–702 (2010).
13. Abu-Amara, M., Akle, C. & Adiseshiah, M. Blind peritoneal access during laparoscopy: why is it still being used. *Int. Surg.* **94**, 201–204 (2009).
14. Jansen, F. W. et al. Complications of laparoscopy: An inquiry about closed- versus open-entry technique. *Am. J. Obstet. Gynecol.* **190**, 634–638 (2004).
15. Deziel, D. J. et al. Complications of laparoscopic cholecystectomy: A national survey of 4,292 hospitals and an analysis of 77,604 cases. *Am. J. Surg.* **165**, 9–14 (1993).
16. Nuzzo, G., Giuliante, F., Tebala, G. D., Vellone, M. & Cavicchioni, C. Routine use of open technique in laparoscopic operations. *J. Am. Coll. Surg.* **184**, 58–62 (1997).
17. Nordestgaard, A. G., Bodily, K. C., W. Osborne, R. & Buttorff, J. D. Major vascular injuries during laparoscopic procedures. *Am. J. Surg.* **169**, 543–545 (1995).
18. Larson, G. M. et al. Multipractice analysis of laparoscopic cholecystectomy in 1,983 patients. *Am. J. Surg.* **163**, 221–226 (1992).
19. Leibl, B. J. et al. A Single Institution's Experience with Transperitoneal Laparoscopic Hernia Repair. *Am. J. Surg.* **175**, 446–452 (1998).
20. McDonald, P. T., Rich, N. M., Collins, G. J., Andersen, C. A. & Kozloff, L. Vascular trauma secondary to diagnostic and therapeutic procedures: Laparoscopy. *Am. J. Surg.* **135**, 651–655 (1978).
21. Mintz, M. Risks and prophylaxis in laparoscopy: a survey of 100,000 cases. *J. Reprod. Med.* **18**, 269–272 (1977).
22. Peterson, H. B., Hulka, J. F. & Phillips, J. M. American Association of Gynecologic Laparoscopists' 1988 membership survey on operative laparoscopy. *J. Reprod. Med.* **35**, 587–589 (1990).
23. Phillips, J. M., Hulka, J. F. & Peterson, H. B. American Association of Gynecologic Laparoscopists' 1982 membership survey. *J. Reprod. Med.* **29**, 592–594 (1984).
24. Phillips, J., Keith, D., Hulka, J., Hulka, B. & Keith, L. Gynecologic laparoscopy in 1975. *J. Reprod. Med.* **16**, 105–117 (1976).
25. Riedel, H.-H., Lehmann-Willenbrock, E., Conrad, P. & Semm, K. German Pelviscopic Statistics for the Years 1978-1982. *Endoscopy* **18**, 219–222 (1986).
26. Yuzpe, A. A. Pneumoperitoneum needle and trocar injuries in laparoscopy. A survey on possible contributing factors and prevention. *J. Reprod. Med.* **35**, 485–490 (1990).
27. Baadsgaard, S. E., Bille, S. & Egeblad, K. Major vascular injury during gynecologic laparoscopy. Report of a case and review of published cases. *Acta Obstet. Gynecol. Scand.* **68**, 283–285 (1989).
28. Chapron, C. et al. Gastrointestinal injuries during gynaecological laparoscopy. *Hum. Reprod. Oxf. Engl.*

- 14**, 333–337 (1999).
29. Saxena, A. K. & van Tuil, C. Advantages of fibrin glue spray in laparoscopic liver biopsies. *Surg. Laparosc. Endosc. Percutan. Tech.* **17**, 545–547 (2007).
  30. Olmi, S. et al. Use of fibrin glue (Tissucol) as a hemostatic in laparoscopic conservative treatment of spleen trauma. *Surg. Endosc.* **21**, 2051–2054 (2007).
  31. Shirk, G. J., Johns, A. & Redwine, D. B. Complications of laparoscopic surgery: How to avoid them and how to repair them. *J. Minim. Invasive Gynecol.* **13**, 352–359; quiz 360–361 (2006).
  32. Quilici, P. J., Greaney, E. M., Quilici, J. & Anderson, S. Transabdominal preperitoneal laparoscopic inguinal herniorrhaphy: results of 509 repairs. *Am. Surg.* **62**, 849–852 (1996).
  33. Tews, G., Arzt, W., Bohaumilitzky, T., Füreder, R. & Frölich, H. Significant reduction of operational risk in laparoscopy through the use of a new blunt trocar. *Surg. Gynecol. Obstet.* **173**, 67–68 (1991).
  34. Fernández, E. M. L.-T., Malagón, A. M., Arteaga, I., Díaz, H. & Carrillo, A. Conservative treatment of a huge abdominal wall hematoma after laparoscopic appendectomy. *J. Laparoendosc. Adv. Surg. Tech. A* **15**, 634–637 (2005).
  35. Phillips, E. H. et al. Incidence of complications following laparoscopic hernioplasty. *Surg. Endosc.* **9**, 16–21 (1995).
  36. Philips, P. A. & Amaral, J. F. Abdominal Access Complications in Laparoscopic Surgery. *J. Am. Coll. Surg.* **192**, 525–536 (2001).
  37. Levinson, C. J. Laparoscopy is easy—except for the complications: a review with suggestions. *J. Reprod. Med.* **13**, 187–194 (1974).
  38. Sharp, H. T. et al. Complications associated with optical-access laparoscopic trocars. *Obstet. Gynecol.* **99**, 553–555 (2002).
  39. Chapron, C. et al. Surgical complications of diagnostic and operative gynaecological laparoscopy: a series of 29,966 cases. *Hum. Reprod. Oxf. Engl.* **13**, 867–872 (1998).
  40. Kaali, S. G. & Bartfai, G. Direct insertion of the laparoscopic trocar after an earlier laparotomy. *J. Reprod. Med.* **33**, 739–740 (1988).
  41. Philosophe, R. Avoiding complications of laparoscopic surgery. *Fertil. Steril.* **80 Suppl 4**, 30–39; quiz 54–56 (2003).
  42. Soderstrom, R. M. Bowel injury litigation after laparoscopy. *J. Am. Assoc. Gynecol. Laparosc.* **1**, 74–77 (1993).
  43. Schwartz, M. J. et al. Laparoscopic bowel injury in retroperitoneal surgery: current incidence and outcomes. *J. Urol.* **184**, 589–594 (2010).
  44. Roopnarinesingh, S., Raj-Kumar, G. & Woo, J. Laparoscopic trocar point perforation of the small bowel. *Int. Surg.* **62**, 76 (1977).
  45. Endler, G. C. & Moghissi, K. S. Gastric perforation during pelvic laparoscopy. *Obstet. Gynecol.* **47**, 40S–42S (1976).
  46. Esposito, J. M. Hematoma of the sigmoid colon as a complication of laparoscopy. *Am. J. Obstet. Gynecol.* **117**, 581–582 (1973).
  47. Birns, M. T. Inadvertent instrumental perforation of the colon during laparoscopy: nonsurgical repair. *Gastrointest. Endosc.* **35**, 54–56 (1989).
  48. Thompson, B. H. & Wheelless, C. R. Gastrointestinal complications of laparoscopy sterilization. *Obstet. Gynecol.* **41**, 669–676 (1973).
  49. Shell, J. H. & Myers, R. C. Small bowel injury after laparoscopic sterilization. *Am. J. Obstet. Gynecol.* **115**, 285 (1973).
  50. Georgy, F. M., Fetterman, H. H. & Chefetz, M. D. Complication of laparoscopy: two cases of perforated urinary bladder. *Am. J. Obstet. Gynecol.* **120**, 1121–1122 (1974).
  51. Homburg, R. & Segal, T. Perforation of the urinary bladder by the laparoscope. *Am. J. Obstet. Gynecol.* **130**, 597 (1978).
  52. Sherer, D. M. Inadvertent transvaginal cystotomy during laparoscopy. *Int. J. Gynaecol. Obstet. Off. Organ Int. Fed. Gynaecol. Obstet.* **32**, 77–79 (1990).
  53. Sia-Kho, E. & Kelly, R. E. Urinary drainage bag distention: an indication of bladder injury during laparoscopy. *J. Clin. Anesth.* **4**, 346–347 (1992).
  54. Levy, B. F. et al. Bladder injuries in emergency/expedited laparoscopic surgery in the absence of previous surgery: a case series. *Ann. R. Coll. Surg. Engl.* **94**, e118–120 (2012).
  55. Wong, J. M. K., Bortoletto, P., Tolentino, J., Jung, M. J. & Milad, M. P. Urinary Tract Injury in Gynecologic Laparoscopy for Benign Indication: A Systematic Review. *Obstet. Gynecol.* **131**, 100–108 (2018).
  56. Poffenberger, R. J. Laparoscopic repair of intraperitoneal bladder injury: a simple new technique. *Urology* **47**, 248–249 (1996).
  57. Gomel, V. & James, C. Intraoperative management of ureteral injury during operative laparoscopy. *Fertil. Steril.* **55**, 416–419 (1991).
  58. Woodland, M. B. Ureter injury during laparoscopy-assisted vaginal hysterectomy with the endoscopic linear stapler. *Am. J. Obstet. Gynecol.* **167**, 756–757 (1992).
  59. Kadar, N. & Lemmerling, L. Urinary tract injuries during laparoscopically assisted hysterectomy: causes and prevention. *Am. J. Obstet. Gynecol.* **170**, 47–48 (1994).
  60. Tamussino, K. F., Lang, P. F. & Breinl, E. Ureteral complications with operative gynecologic laparoscopy. *Am. J. Obstet. Gynecol.* **178**, 967–970 (1998).
  61. Saidi, M. H. et al. Diagnosis and management of serious urinary complications after major operative laparoscopy. *Obstet. Gynecol.* **87**, 272–276 (1996).
  62. Gao, J.-S., Leng, J.-H., Liu, Z.-F., Shen, K. & Lang, J.-H. Ureteral injury during gynecological laparoscopic surgeries: report of twelve cases. *Chin. Med. Sci. J. Chung-Kuo Hsueh Ko Hsueh Tsa Chih* **22**, 13–16 (2007).
  63. Swank, H. A. et al. Systematic review of trocar-site

- hernia. *Br. J. Surg.* **99**, 315–323 (2012).
64. Azurin, D. J., Go, L. S., Arroyo, L. R. & Kirkland, M. L. Trocar site herniation following laparoscopic cholecystectomy and the significance of an incidental preexisting umbilical hernia. *Am. Surg.* **61**, 718–720 (1995).
  65. George, null. Presentation and Management of Laparoscopic Incisional Hernias. *J. Am. Assoc. Gynecol. Laparosc.* **1**, S12 (1994).
  66. Felix, E. L., Harbertson, N. & Vartanian, S. Laparoscopic hernioplasty: significant complications. *Surg. Endosc.* **13**, 328–331 (1999).
  67. Fitzgibbons, R. J. *et al.* Laparoscopic inguinal herniorrhaphy. Results of a multicenter trial. *Ann. Surg.* **221**, 3–13 (1995).
  68. Ramshaw, B. J. *et al.* A comparison of the approaches to laparoscopic herniorrhaphy. *Surg. Endosc.* **10**, 29–32 (1996).
  69. Bensley, R. P. *et al.* Risk of late-onset adhesions and incisional hernia repairs after surgery. *J. Am. Coll. Surg.* **216**, 1159–1167, 1167.e1–12 (2013).
  70. Montz, null, Holschneider, null & Munro, null. Incisional Hernia Following Laparoscopy: A Survey of the American Association of Gynecologic Laparoscopists. *J. Am. Assoc. Gynecol. Laparosc.* **1**, S23-24 (1994).
  71. Johnson, W. H., Fecher, A. M., McMahon, R. L., Grant, J. P. & Pryor, A. D. VersaStep trocar hernia rate in unclosed fascial defects in bariatric patients. *Surg. Endosc.* **20**, 1584–1586 (2006).
  72. Marks, J. M. *et al.* Single-incision laparoscopic cholecystectomy is associated with improved cosmesis scoring at the cost of significantly higher hernia rates: 1-year results of a prospective randomized, multicenter, single-blinded trial of traditional multiport laparoscopic cholecystectomy vs single-incision laparoscopic cholecystectomy. *J. Am. Coll. Surg.* **216**, 1037–1047; discussion 1047-1048 (2013).
  73. Boike, G. M. *et al.* Incisional bowel herniations after operative laparoscopy: a series of nineteen cases and review of the literature. *Am. J. Obstet. Gynecol.* **172**, 1726–1731; discussion 1731-1733 (1995).
  74. Kadar, N., Reich, H., Liu, C. Y., Manko, G. F. & Gimpelson, R. Incisional hernias after major laparoscopic gynecologic procedures. *Am. J. Obstet. Gynecol.* **168**, 1493–1495 (1993).
  75. Tonouchi, H., Ohmori, Y., Kobayashi, M. & Kusunoki, M. Trocar site hernia. *Arch. Surg. Chic. Ill 1960* **139**, 1248–1256 (2004).
  76. Liu, C. D. & McFadden, D. W. Laparoscopic port sites do not require fascial closure when nonbladed trocars are used. *Am. Surg.* **66**, 853–854 (2000).
  77. Bhojrul, S., Payne, J., Steffes, B., Swanstrom, L. & Way, L. W. A randomized prospective study of radially expanding trocars in laparoscopic surgery. *J. Gastrointest. Surg. Off. J. Soc. Surg. Aliment. Tract* **4**, 392–397 (2000).
  78. Bruyère, F., Sun, J., Cosson, J.-P. & Kouri, G. Incarceration of bowel through opening of a 5-mm port. *J. Endourol.* **18**, 675–676 (2004).
  79. Chen, L. F., Anderson, D. J., Hartwig, M. G., Kaye, K. S. & Sexton, D. J. Surgical site infections after laparoscopic and open cholecystectomies in community hospitals. *Infect. Control Hosp. Epidemiol.* **29**, 92–94; author reply 94-95 (2008).
  80. Abu-Rustum, N. R. *et al.* Subcutaneous tumor implantation after laparoscopic procedures in women with malignant disease. *Obstet. Gynecol.* **103**, 480–487 (2004).
  81. Ramirez, P. T., Wolf, J. K. & Levenback, C. Laparoscopic port-site metastases: etiology and prevention. *Gynecol. Oncol.* **91**, 179–189 (2003).
  82. Pados, G., Vavilis, D., Pantazis, K., Agorastos, T. & Bontis, J. N. Unilateral vulvar edema after operative laparoscopy: a case report and literature review. *Fertil. Steril.* **83**, 471–473 (2005).
  83. Guven, S., Guven, E. S. G. & Ayhan, A. Vulvar edema as a rare complication of laparoscopy. *J. Am. Assoc. Gynecol. Laparosc.* **11**, 429–432 (2004).
  84. Marcovici, I. & Shadigian, E. Operative laparoscopy and vulvar hematoma: an unusual association. *JSL S* **5**, 87–88 (2001).
  85. Pavan, N. *et al.* Risk of Virus Contamination Through Surgical Smoke During Minimally Invasive Surgery: A Systematic Review of the Literature on a Neglected Issue Revived in the COVID-19 Pandemic Era. *Eur. Urol. Focus* **6**, 1058–1069 (2020).
  86. Wang, W. *et al.* Detection of SARS-CoV-2 in Different Types of Clinical Specimens. *JAMA* **323**, 1843–1844 (2020).
  87. Mintz, Y. *et al.* The risk of COVID-19 transmission by laparoscopic smoke may be lower than for laparotomy: a narrative review. *Surg. Endosc.* **34**, 3298–3305 (2020).
  88. Francis, N. *et al.* SAGES and EAES recommendations for minimally invasive surgery during COVID-19 pandemic. *Surg. Endosc.* **34**, 2327–2331 (2020).
  89. Zheng, M. H., Boni, L. & Fingerhut, A. Minimally Invasive Surgery and the Novel Coronavirus Outbreak: Lessons Learned in China and Italy. *Ann. Surg.* **272**, e5–e6 (2020).
  90. Lei, S. *et al.* Clinical characteristics and outcomes of patients undergoing surgeries during the incubation period of COVID-19 infection. *EClinicalMedicine* **21**, 100331 (2020).
  91. Aminian, A., Safari, S., Razeghian-Jahromi, A., Ghorbani, M. & Delaney, C. P. COVID-19 Outbreak and Surgical Practice: Unexpected Fatality in Perioperative Period. *Ann. Surg.* **272**, e27–e29 (2020).