

Bölüm 18

Endometriozis

Dr. Deniz KULAKSIZ

Dr. Cihat ÜNLÜ

Tanım

Endometriozis normal olarak uterusta bulunması gereken endometrial bez ve stromanın uterus dışında; özellikle pelvik peritonda, overler, tubalar, rektovaginal fasya, üreter, nadiren de mesane, perikardium ve plevra gibi birçok bölgede bulunması şeklinde tanımlanan ve pelvik ağrı ile infertilitenin eslik ettiği kronik inflamatuvar bir süreçtir(Comiter, 2002; Giudice, 2004; Von Rokitansky,1860).

Prevalans ve insidans

İlk tariflenmesi 1860 yılına Von Rokitansky'e aittir(Von Rokitansky,1860). Kesin tanısı histopatolojik olarak konulduğundan ve çoğunlukla hastalık asemptomatik seyrettiğinden tam bir prevalans vermek mümkün değildir. Asemptomatik kadınlarda, endometriozis sıklığı yüzde ikiden yüzde yirmi ikiye değişen bir araliktadır (Eskenazi, 1997; Mahmood, 1991; Moen, 1997). İnfertil kadınarda yaygınlığı yüzde yirmi ile yüzde elli arasında değişmekteyken; pelvik ağrın eşlik etmesi durumunda bu oran yüzde kırk ile elli arasında değişmektedir (Balasch, 1996; Eskenazi, 2001; Meuleman, 2009).

Etyopatogenez

Endometriozisin etyopatogeneziyle ilgili ilk teori 1927 yılında endometrial dokunun peritoneal kaviteye menstrüel yayılımı olarak Sampson tarafından öne sürülmüştür(Sampson,1927). Bu teori tüm en-

dometriozis vakalarında etyopatogenezi açıklamakla beraber peritoneal endometrioziste primer mekanizmayı açıklamada en büyük yardımcıdır. Yapılan çalışmalarla birlikte dört ana teori ortaya konulmuştur.

Retrograd menstrüasyon

İlk ve en yaygın kabul edilen bu teoriye göre endometrial hücrelerin tubalardan regurjitasyonu ve peritoneal kaviteye implantasyonu sonucunda endometriotik odakların olduğu düşünülmektedir (Sampson,1927). Geri kaçan endometrial fragmanlar peritona adhere olmakta ve peritoneal mezoteldeki kan akımı ile beslenmeye başlamakta, büyümeye ve hücre devamlılığını bu şekilde sağlamaktadırlar (Giudice, 2004).

Uterus hiperperistaltizm ve disperistaltizmi olan endometriozisli kadınlar kaydedildi ve sonrasında bu kadınarda artmış endometrial reflü belirlendi (Leyendecker, 2004). Uterus anomalileri, serviks darlığı, vajen atrezisi ve imperfore himen gibi retrograd menstrüasyonu arttıran durumlarda endometriozisin daha fazla görülmemesi bu teoriyi desteklemektedir. Ek olarak menometrorajili kadınlarda endometriozis daha sık görülmektedir. Retrograd menstrüasyon teorisi pelvik endometriozisi açıklamaya yardımcı olurken diğer bölgelerde oluşan endometriozisi tanımlamaya açıklık getirmemektedir. Ek olarak kadınların %70-80'ninde retrograd menstrüasyon görülmesine rağmen endometriozis insidansı bu grupta %7dir (Halme,1984).

olan kadınlar için, sadece progestin içeren tedaviler tercih edilebilir. Bunun için yaygın olarak medroksiprogesteron asetat (MPA) ya da 19-nortestosteron türevi noretindron asetat ve Dienogest kullanılmaktadır.

Progesteronun desidualizasyon etkisine dayanmaktadır. Ek olarak peritoneal inflamatuar etkiyi de baskınlarlar(Roman, 2007). Ağrı semptomu üzerine etkili olmakla beraber infertiliteye etki göstermezler. Dienogest, selektif 19 nortestosteron ve progesteron türevidir ve pelvik ağrıyı gidermede kullanılır. Günlük 2 mg dienogestin 24 hafta kullanımı ile semptomatik tedavi sağlanırken kür oluşturmada bu tedavi tek başına yeterli değildir. Gebelik istemeyen hastalarda umut verici tedavi olarak görülmektedir. Dienogest kullanımı ile oluşan ağrı azaltıcı etki tedavi sonrasında da çoğunlukla devam etmektedir. Yan etki olarak sıvı retansiyonu, başağrısı, yorgunluk, meme hassasiyeti yapabilirler. GnRH analogu kullanan kadınlardakinin aksine ateş basması, kemik mineral yoğunluğu azalması gibi hipoöstrojenik yan etkiler daha az görülür. Ancak anormal uterin kanama sıklığı GnRH analogu kullananlardan daha fazladır.

Levonorgestrel

Levonorgestrel içeren intrauterin araçlar ağrı semptomu için sistemik progesterona alternatifdir (Lockhat, 2004) . Gebelik istemi olmayan hastalarda menstrüel kan kaybını azaltıcı ve dismenoreyi önleyici etkisi ile uzun süreli tedavide öne çıkmaktadır (Vercellini, 2005).

Danazol

Danazol zayıf bir androjendir. Gonadotropin salınımını azaltır. Siklus ortasında oluşan LH peaki inhibe ederek anovulatuar durumu neden olur. Hiperandrojenik ve hipoöstrojenik bir ortam oluşturur. Amenoreyle retrograde endometrial hücre ekilmesini engeller. Kalıcı ses kalınlaşması, kilo alımı, ödem, akne, meme atrofisi gibi yan etkileri bulunan bu medikasyon ağrı semptomlarına karşı etkili olmasına rağmen güncel pratığımızde artık kullanılmamaktadır.

Nonsteroid antiinflamatuar

Siklooksijenaz enzimi inhibisyonuyla ağrı kontrolünde kullanılırlar. Kronik pelvik ağrında medikal

tedavide öncelikli tercih edilirler(Allen, 2005). Ağrının yanı sıra endometriotik odakların büyümесini de engelleyebilir(Efstathiou,2005). Ovulasyon inhibitörleri, kardiyovasküler ve gastrik yan etkileri olan bu grup ilaçlar özellikle dismenorede adet dönenle rinde tercih edilmektedir.

Günümüz kadın hastalıkları ve doğum pratığinde pelvik ağrılı hastaların önemli bir kısmını oluşturan endometriozisli hastalar için çok sayıda çalışma yapılmış olup halen çok sayıda çalışma devam etmektedir. Hergün yenilenen bilgiler işliğinde uzman hekimlerce yeni tedavi modaliteleri geliştirilmektedir.

Kaynaklar

1. Adamson D. Surgical management of endometriosis, *Semin Reprod Med*. 21:223,2003
2. Allen C, Hopewell S, Prentice A. *Cochrane Database Syst Rev*. Non-steroidal antiinflammatory drugs for pain in women with endometriosis. 2005 Oct 19;(4):CD004753
3. Athey PA, Diment DD: The spectrum of sonographic findings in endometriomas. *J Ultrasound Med* 8:487, 1989
4. Balasch J, Creus M, Fabregues F, et al: Visible and non-visible endometriosis at laparoscopy in fertile and infertile women and in patients with chronic pelvic pain: a prospective study. *Hum Reprod* 11:387, 1996
5. Bedaiwy MA, Falcone T, Sharma RK, et al: Prediction of endometriosis with serum and peritoneal fluid markers: a prospective controlled trial. *Hum Reprod* 17:426, 2002
6. Berker B, Duran M.: Endometriozisin ve endometriomaların cerrahi tedavisi. *Endometriozis Etiyoloji ve Klinik Yönetim*, 395-406, 2015
7. Berkley KJ, Rapkin AJ, Papka RE: The pains of endometriosis. *Science* 308: 1587, 2005
8. Bischoff FZ, Simpson JL: Heritability and molecular genetic studies of endometriosis. *Hum Reprod Update* 6:37, 2000
9. Braun DP, Muriana A, Gebel H, et al: Monocyte-mediated enhancement of endometrial cell proliferation in women with endometriosis. *Fertil Steril* 61:78, 1994
10. Breech LL, Laufer MR: Obstructive anomalies of the female reproductive tract. *J Reprod Med* 44:233, 1999
11. Bulun SE, Yang S, Fang Z, et al: Estrogen production and metabolism in endometriosis. *Ann N Y Acad Sci* 955:75, 2002
12. Cameron IC, Rogers S, Collins MC, et al: Intestinal endometriosis: presentation, investigation, and surgical management. *Int J Colorectal Dis* 10:83, 1995

13. Carbognin G, Guarise A, Minelli L, et al: Pelvic endometriosis: US and MRI features. *Abdom Imaging* 29:609, 2004
14. Chapron C, Dubuisson JB, Pansini V, et al: Routine clinical examination is not sufficient for diagnosing and locating deeply infiltrating endometriosis. *J Am Assoc Gynecol Laparosc* 9:115, 2002
15. Comiter CV: Endometriosis of the urinary tract. *Urol Clin North Am* 29:625, 2002
16. D'Hooghe TM, Bambra CS, Raeymaekers BM, et al: The cycle pregnancy rate is normal in baboons with stage I endometriosis but decreased in primates with stage II and stage III-IV disease. *Fertil Steril* 66:809, 1996
17. Daftary GS, Taylor HS: EMX2 gene expression in the female reproductive tract and aberrant expression in the endometrium of patients with endometriosis. *J Clin Endocrinol Metab* 89:2390, 2004
18. Dictor M, Nelson CE, Uvelius B: Priapism in a patient with endometrioid prostatic carcinoma. A case report. *Urol Int* 43:245, 1988
19. Dlugi AM, Miller JD, Knittle J: Lupron depot (leuprolide acetate for depot suspension) in the treatment of endometriosis: a randomized, placebo-controlled, double-blind study. Lupron Study Group. *Fertil Steril*. 1990 Sep;54(3):419-27.
20. Edelman AB, Gallo MF, Jensen JT, Nichols MD, Schulz KF, Grimes DA: Continuous or extended cycle vs. cyclic use of combined oral contraceptives for contraception. *Cochrane Database Syst Rev*. 2005
21. Efstathiou JA, Sampson DA, Levine Z, Rohan RM, Zurakowski D, Folkman J, D'Amato RJ, Rupnick MA: Nonsteroidal antiinflammatory drugs differentially suppress endometriosis in a murine model. *Fertil Steril*. 2005 Jan;83(1):171-81
22. Eskenazi B, Warner M, Bonsignore L, et al: Validation study of nonsurgical diagnosis of endometriosis. *Fertil Steril* 76:929, 2001
23. Fauconnier A, Chapron C, Dubuisson JB, et al: Relation between pain symptoms and the anatomic location of deep infiltrating endometriosis. *Fertil Steril* 78:719, 2002
24. Fedele L, Bianchi S, Bocciolone L, et al: Pain symptoms associated with endometriosis. *Obstet Gynecol* 79:767, 1992
25. Ferrero S, Esposito F, Abbamonte LH, et al: Quality of sex life in women with endometriosis and deep dyspareunia. *Fertil Steril* 83:573, 2005
26. Frühauf F, Fanta M, Burgetová A, Fischerová D: Endometriosis in pregnancy – diagnostics and management. *Ceska Gynekologie*, 84:1, 2019
27. Giudice LC, Kao LC: Endometriosis. *Lancet* 364:1789, 2004
28. Gleicher N, Dmowski WP, Siegel I, et al: Lymphocyte subsets in endometriosis. *Obstet Gynecol* 63:463, 1984
29. Guzick DS, Silliman NP, Adamson GD, et al: Prediction of pregnancy in infertile women based on the American Society for Reproductive Medicine's revised classification of endometriosis. *Fertil Steril* 67:822, 1997
30. Hadfield RM, Mardon HJ, Barlow DH, et al: Endometriosis in monozygotic twins. *Fertil Steril* 68:941, 1997
31. Halme J, Hammond MG, Hulka JF, Raj SG and Talbert LM: Retrograde menstruation in healthy women and in patients with endometriosis. *Obstet Gynecol* 1984; 64: 151-4
32. Haney AF, Muscato J, Weinberg JB: Peritoneal fluid cell populations in infertility patients. *Fertil Steril* 35:696, 1981
33. Harada T, Kubota T, Aso T: Usefulness of CA19-9 versus CA125 for the diagnosis of endometriosis. *Fertil Steril* 78:733, 2002
34. Hornstein MD, Harlow BL, Thomas PP, et al: Use of a new CA 125 assay in the diagnosis of endometriosis. *Hum Reprod* 10:932, 1995
35. Hughes E, Federkow D, Collins C, Vandekerckhove P: Ovulation suppression for endometriosis, *Cochrane Database Syst Rev*, 2003
36. Jansen RP, Russell P: Nonpigmented endometriosis: clinical, laparoscopic, and pathologic definition. *Am J Obstet Gynecol* 155:1154, 1986
37. Joki-Erkkila MM, Heinonen PK: Presenting and long-term clinical implications and fecundity in females with obstructing vaginal malformations. *J Pediatr Adolesc Gynecol* 16:307, 2003
38. Kasapoğlu I, Türk P, Dayan A, Uncu G.: Does the presence of endometriosis cause a challenge for transvaginal oocyte retrieval? A comparison between patients with and without endometriosis. *J Turk Ger Gynecol Assoc.* 19(3):151-157, 2018
39. Kennedy S, Bergqvist A, Chapron C, et al: ESHRE guideline for the diagnosis and treatment of endometriosis. *Hum Reprod* 20:2698, 2005
40. Khan KN, Kitajima M, Hiraki K, Fujishita A, Sekine I, Ishimaru T, Masuzaki H: Immunopathogenesis of pelvic endometriosis: role of hepatocyte growth factor, macrophages and ovarian steroids. *Am J Reprod Immunol* 60: 383–404, 2008
41. Kitawaki J, Noguchi T, Amatsu T, et al: Expression of aromatase cytochrome P450 protein and messenger ribonucleic acid in human endometriotic and adenomyotic tissues but not in normal endometrium. *Biol Reprod* 57:514, 1997
42. Koger KE, Shatney CH, Hodge K, et al: Surgical scar endometrioma. *Surg Gynecol Obstet* 177:243, 1993
43. Koninckx PR, Meuleman C, Oosterlynck D, et al: Diagnosis of deep endometriosis by clinical examination during menstruation and plasma CA-125 concentration. *Fertil Steril* 65:280, 1996

44. Lauchian SC. The secondary Mullerian system. *Obstet Gynecol Surv* 1972;27:133-46
45. Leyendecker G, Kunz G, Herbertz M, et al: Uterine peristaltic activity and the development of endometriosis. *Ann N Y Acad Sci* 1034:338, 2004
46. Lockhart F.B., Emembolu J.O. and Konje J.C. The evaluation of the effectiveness of an intrauterine-administered progestogen (levonorgestrel) in the symptomatic treatment of endometriosis and in the staging of the disease. *Human Reproduction*, Vol. 19, No. 1, 179-184, January 2004
47. Mahmood TA, Templeton A: Prevalence and genesis of endometriosis. *Hum Reprod* 6:544, 1991
48. Markham SM, Carpenter SE, et al: Extrapelvic endometriosis. *Obstet Gynecol Clin North Am* 16:193, 1989
49. Marques A, Bahamondes L, Aldrighi JM, Petta CA. Quality of life in Brazilian women with endometriosis assessed through a medical outcome questionnaire. *J Reprod Med*. 2004 Feb;49(2):115-20.
50. Mathias SD, Kuppermann M, Liberman RF, et al: Chronic pelvic pain: prevalence, health-related quality of life, and economic correlates. *Obstet Gynecol* 87:321, 1996
51. Matsuura K, Ohtake H, Katauchi H, et al: Coelomic metaplasia theory of endometriosis: evidence from in vivo studies and an in vitro experimental model. *Gynecol Obstet Invest* 47(Suppl 1):18, 1999
52. Mayani A, Barel S, Soback S, et al: Dioxin concentrations in women with endometriosis. *Hum Reprod* 12:373, 1997
53. McLaren J, Prentice A, Charnock-Jones DS, et al: Vascular endothelial growth factor is produced by peritoneal fluid macrophages in endometriosis and is regulated by ovarian steroids. *J Clin Invest* 98:482, 1996
54. McMeekin DS, Tillmanns T: Endometrial cancer: treatment of nodal metastases. *Curr Treat Options Oncol* 4:121, 2003
55. Meuleman C, Vandebaele B, Fieuws S, et al: High prevalence of endometriosis in infertile women with normal ovulation and normospermic partners. *Fertil Steril* 92:68, 2009
56. Mitchell AO, Hoffman AP, Swartz SE, et al: An unusual occurrence of endometriosis in the right groin: a case report and review of the literature. *Mil Med* 156:633, 1991
57. Moen MH, Schei B: Epidemiology of endometriosis in a Norwegian county. *Acta Obstet Gynecol Scand* 76:559, 1997
58. Moore JG, Binstock MA, et al: The clinical implications of retroperitoneal endometriosis. *Am J Obstet Gynecol* 158:1291, 1988
59. Mori H, Sawairi M, Nakagawa M, et al: Peritoneal fluid interleukin-1 beta and tumor necrosis factor in patients with benign gynecologic disease. *Am J Reprod Immunol* 26:62, 1991
60. Murphy AA: Clinical aspects of endometriosis. *Ann N Y Acad Sci* 955:1, 2002
61. Nezhat C, Nezhat F: A simplified method of laparoscopic presacral neurectomy for the treatment of central pelvic pain due to endometriosis. *Br J Obstet Gynaecol* 99:659, 1992
62. Noble LS, Takayama K, Zeitoun KM, et al: Prostaglandin E2 stimulates aromatase expression in endometriosis-derived stromal cells. *J Clin Endocrinol Metab* 82:600, 1997
63. Odukoya OA, Wheatcroft N, Weetman AP, et al: The prevalence of endometrial immunoglobulin G antibodies in patients with endometriosis. *Hum Reprod* 10:1214, 1995
64. Olive DL, Stohs GF, Metzger DA, et al: Expectant management and hydrotubations in the treatment of endometriosis-associated infertility. *Fertil Steril* 44:35, 1985
65. Osuga Y, Koga K, Tsutsumi O, et al: Role of laparoscopy in the treatment of endometriosis-associated infertility. *Gynecol Obstet Invest* 53(Suppl 1):33, 2002
66. Patel MD, Feldstein VA, Chen DC, et al: Endometriomas: diagnostic performance of US. *Radiology* 210:739, 1999
67. Pinkert TC, Catlow CE, Straus R: Endometriosis of the urinary bladder in a man with prostatic carcinoma. *Cancer* 43:1562, 1979
68. Pollack R, Gordon PH, Ferenczy A, et al: Perineal endometriosis. A case report. *J Reprod Med* 35:109, 1990
69. Possover M, Chiantera V: Isolated infiltrative endometriosis of the sciatic nerve: a report of three patients. *Fertil Steril* 87(2):417.e17, 2007
70. Price DT, Maloney KE, Ibrahim GK, et al: Vesical endometriosis: report of two cases and review of the literature. *Urology* 48:639, 1996
Reprod Med 21:125, 2003
71. Rier S, Foster WG: Environmental dioxins and endometriosis. *Semin Reprod Med* 21: 145, 2003
72. Roman H. Guidelines for the management of painful endometriosis. *J Gynecol Obstet Biol Reprod (Paris)*. 2007 Apr;36(2):141-50.
73. Roman H. Guidelines for the management of painful endometriosis. *J Gynecol Obstet Biol Reprod (Paris)*. 2007 Apr;36(2):141-50. Epub 2007 Feb 2
74. Ryu JS, Song ES, Lee KH, et al: Natural history and therapeutic implications of patients with catamenial hemoptysis. *Respir Med* 101(5):1032, 2007
75. Satyashwaroop PG, Wartell DJ, Mortel R: Distribution of progesterone receptor, estradiol dehydrogenase, and 20 alpha-dihydroprogesterone dehydrogenase activities in human endometrial glands and stroma: progestin induction of steroid dehydrogenase activities in vitro is restricted to the glandular epithelium. *Endocrinology* 111:743, 1982

76. Schattman GL, Grifo JA, Birnbaum S: Laparoscopic resection of a noncommunicating rudimentary uterine horn. A case report. *J Reprod Med* 40:219, 1995
77. Schenken RS, Asch RH: Surgical induction of endometriosis in the rabbit: effects on fertility and concentrations of peritoneal fluid prostaglandins. *Fertil Steril* 34:581, 1980
78. Sciume C, Geraci G, Pisello F, et al: [Intestinal endometriosis: an obscure cause of cyclic rectal bleeding]. *Ann Ital Chir* 75:379, 2004
79. Seli E, Arici A: Endometriosis: interaction of immune and endocrine systems. *Semin Reprod Med* 21:135, 2003
80. Treloar SA, O'Connor DT, O'Connor VM, et al: Genetic influences on endometriosis in an Australian twin sample. *Fertil Steril* 71:701, 1999
81. Tseng JF, Ryan IP, Milam TD, et al: Interleukin-6 secretion in vitro is upregulated in ectopic and eutopic endometrial stromal cells from women with endometriosis. *J Clin Endocrinol Metab* 81:1118, 1996
82. Ueki M: Histologic study of endometriosis and examination of lymphatic drainage in and from the uterus. *Am J Obstet Gynecol* 165:201, 1991
83. Varras M, Kostopanagiotou E, Katis K, et al: Endometriosis causing extensive intestinal obstruction simulating carcinoma of the sigmoid colon: a case report and review of the literature. *Eur J Gynaecol Oncol* 23:353, 2002
84. Vercellini P, Meschia M, De Giorgi O, et al: Bladder detrusor endometriosis: clinical and pathogenetic implications. *J Urol* 155:84, 1996
85. Vercellini P, Trespudi L, Colombo A, Vendola N, Marchini M, , A gonadotropin releasing hormone agonist versus a low-dose oral contraceptive for pelvic pain associated with endometriosis, *Fertil Steril* 60:75, 1993
86. Vercellini P, Vendola N, Bocciolone L, et al: Reliability of the visual diagnosis of ovarian endometriosis. *Fertil Steril* 56:1198, 1991
87. Vercellini P, Vigano P, Somigliana E. The role of the levonorgestrel-releasing intrauterine device in the management of symptomatic endometriosis. *Curr Opin Obstet Gynecol.* 2005 Aug;17(4):359-65
88. Vilos GA, Vilos AW, Haebe JJ: Laparoscopic findings, management, histopathology, and outcome of 25 women with cyclic leg pain. *J Am Assoc Gynecol Laparosc* 9:145, 2002
89. Vinatier D, Orazi G, Cosson M, et al: Theories of endometriosis. *Eur J Obstet Gynecol Reprod Biol* 96:21, 2001
90. Von Rokitansky C: Ueber Uterusdrusen-neubildung in Uterus und Ovarilsarcomen. *Z Ges Aerzte Wein* 37:577, 1860
91. Waller KG, Lindsay P, Curtis P, et al: The prevalence of endometriosis in women with infertile partners. *Eur J Obstet Gynecol Reprod Biol* 48:135, 1993
92. Walter AJ, Hentz JG, Magtibay PM, et al: Endometriosis: correlation between histologic and visual findings at laparoscopy. *Am J Obstet Gynecol* 184:1407, 2001
93. Watanabe M, Kamiyama G, Yamazaki K, et al: Anal endosonography in the diagnosis and management of perianal endometriosis: report of a case. *Surg Today* 33:630, 2003
94. Wickramasekera D, Hay DJ, Fayz M: Acute small bowel obstruction due to ileal endometriosis: a case report and literature review. *J R Coll Surg Edinb* 44:59, 1999
95. Wilson TJ, Hertzog PJ, Angus D, et al: Decreased natural killer cell activity in endometriosis patients: relationship to disease pathogenesis. *Fertil Steril* 62:1086, 1994
96. Yang WL, Lu Z, Guo J, Fellman BM, Ning J, Lu KH, Menon U, Kobayashi M, Hanash SM, Celestino J, Skates SJ, Bast RC Jr.: Human epididymis protein 4 antigen-autoantibody complexes complement cancer antigen 125 for detecting early-stage ovarian cancer, *Cancer*,35:1-12,2019
97. Yavuzcan A, Başbuğ A, Baştan M, Çağlar M, Özdemir İ.: The effect of adenomyosis on the outcomes of laparoscopic hysterectomy. *J Turk Ger Gynecol Assoc.* 17(3):150-4,2016
98. Young S, Burns MK, DiFrancesco L, Nezhat A, Nezhat C : Diagnostic and treatment guidelines for gastrointestinal and genitourinary endometriosis, *J Turk Ger Gynecol Assoc,* 18(4):200-209,2017
99. Zeitoun K, Takayama K, Sasano H, et al: Deficient 17 beta-hydroxysteroid dehydrogenase type 2 expression in endometriosis: failure to metabolize 17 beta-estradiol. *J Clin Endocrinol Metab* 83:4474, 1998
100. Zhang NN, Sun TS, Yang Q: An effective “water injection”-assisted method for excision of ovarian endometrioma by laparoscopy. *Fertil Steril* 112:608–9,2019
101. Zhu L, Wong F, Lang JH: Perineal endometriosis after vaginal delivery clinical experience with 10 patients. *Aust N Z J Obstet Gynaecol* 42:565, 2002