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INTRODUCTION

Ovarian torsion, which affects females of all ages, is a gynecological emergency [1,2,3]. It refers to a complete or partial rotation of the adnexal supporting organ, resulting in ischemic changes in the ovary. Torsions more commonly involve both the ovary and fallopian tube, and there are fewer cases of isolated torsion involving either one (one in 1.5 million women) [4,5,6]. Torsion involving paratubal or paraovarian cysts has also been found [2,7,8]. Early diagnosis and surgery are essential to protect ovarian and tubal function and prevent severe morbidity [9,10].

Pathogenesis

Ovarian torsion occurs when an ovarian cyst or mass presents and rotates both the infundibulopelvic ligament and the ovarian ligament. The cyst or mass is usually a benign lesion over 5 cm in diameter [11,12,13,14]. Torsion can also occur in normal ovaries, however, particularly in premenarchal girls who have elongated infundibulopelvic ligaments [15,16,17].

Clinical presentation

The most common symptom is acute onset of lower abdominal pain, followed by nausea and vomiting. The abdominal pain is usually off and on with a sudden onset. [14,18,20,21]. Ovarian torsion without infective disease resulting in a low-grade fever has been found in some patients [14,18,19].

EVALUATION AND DIAGNOSIS

There is no serum marker for a diagnosis of adnexal torsion. Several serum markers can hint at an adnexal tumor type. Serum human chorionic gonadotropin can reveal pregnancy or an ovarian germ cell tumor. CA-125 may indicate a malignant ovary tumor or endometrioma [22,23].

Imaging studies are the most important when evaluating a pelvic mass [25]. Ultrasonography is the first-line diagnostic assessment [26,27]. An ultrasound can easily distinguish an ovarian mass by its components, location, density, Doppler flow, and size. There can be decreased or absent Doppler flow in the vessels of a twisted ovary [28,29,30].

Magnetic resonance imaging (MRI) is expensive but helpful in diagnosing ovarian torsion if findings on ultrasound are equivocal [31,32,33,34,35,36,37]. MRI can demonstrate the components of a mass in more detail than an ultrasound.

Finally, direct visualization is needed for a definitive diagnosis of ovary torsion. Hence, the diagnosis needs to be surgical proven for early rescue of ovary function.

PREVENTION OF RECURRENCE

There is a risk of recurrence after detorsion, but the incidence and causes are unknown [13,16,50,51,52]. According to recent research, several methods can be used to decrease the risk of recurrence. One method is suppression of ovarian cysts by oral contraceptives [53,54,55,56]. Another method is an oophorectomy [49,57,58]. However, both approaches lack long-term follow-up and systematic study.

Patients and methods

In the period of 13 months from January 2018 to February 2019, we have operated on 9 patients with ovarian torsion. These patients presented to us with acute pelvic and lower abdominal pain. All patients had emergency ultrasound scan performed to detect any ovarian cysts or masses. Laparoscopy was performed with detorsion of the twisted ovaries and cystectomy was conducted either in the first procedure or during the 2nd look laparoscopy after resolution of the edema and congestion. Oophorectomy was preserved to patients with long ovarian and infundibulopelvic ligaments.

Results

Age of patients ranged from 19 to 44 years and 2 of them were virgins. Seven patients out of the nine had ovarian cysts (3 haemorrhagic cysts, 2 endometriomas, 1 corpus luteum cysts and 1 papillary serous cystadenoma). The torsion was discovered on the right side in 6 out of the 9 cases and on the left side in 3 of them.

Cystectomy was performed for all patients; five of them the cystectomy was done in the same procedure after the untwisting and 2 were done in the 2nd look laparoscopy after resolution of the congestion and edema. Detorsion and cystectomy were conducted laparoscopically apart from one with a large ovarian cyst 150x130 mm where conversion to laparotomy was performed. Oophorectomy was done in 3 patients to prevent retorsion.

Two cases had chronic ovarian torsion with ovarian adhesions to lateral pelvic wall. One of them had a twisted trapped ovary following subtotal abdominal hysterectomy.

Conclusion

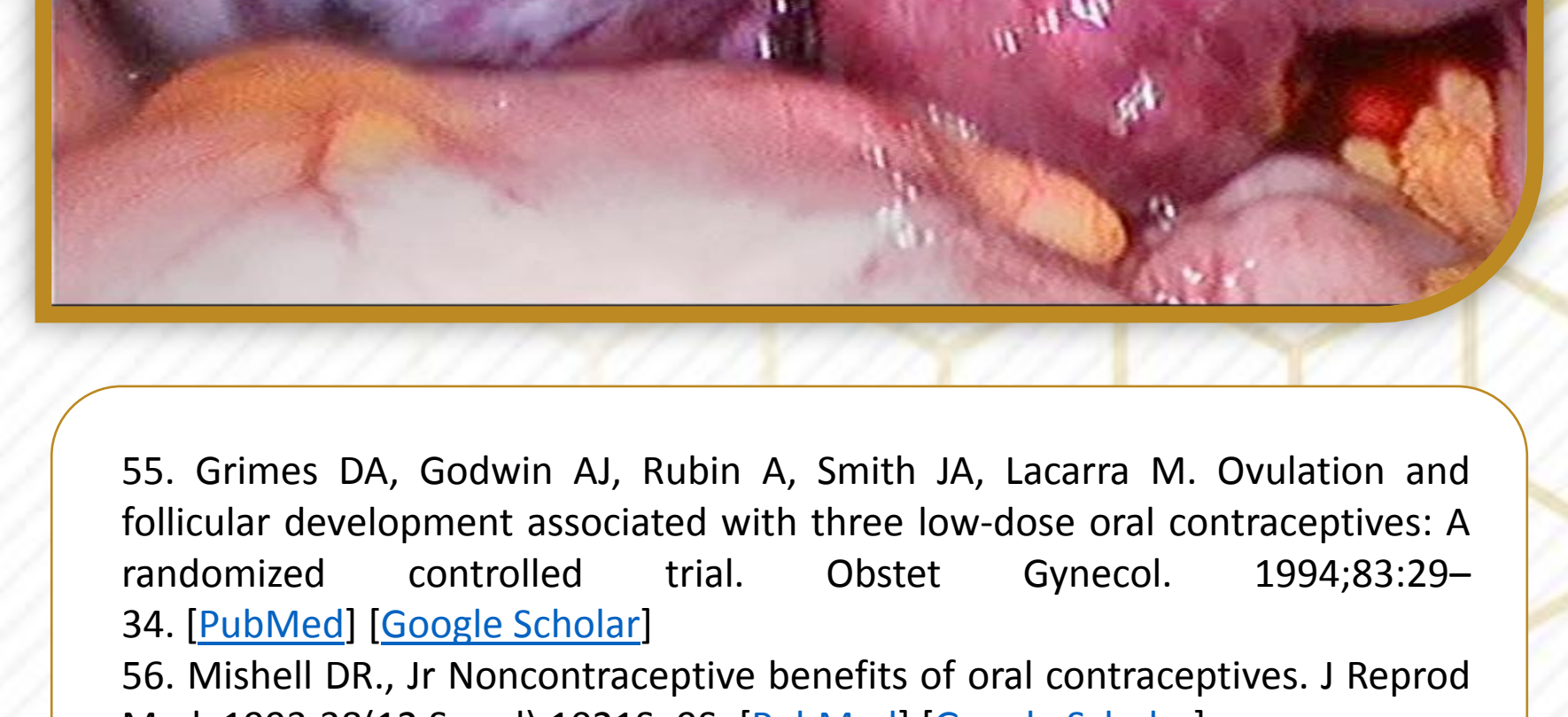
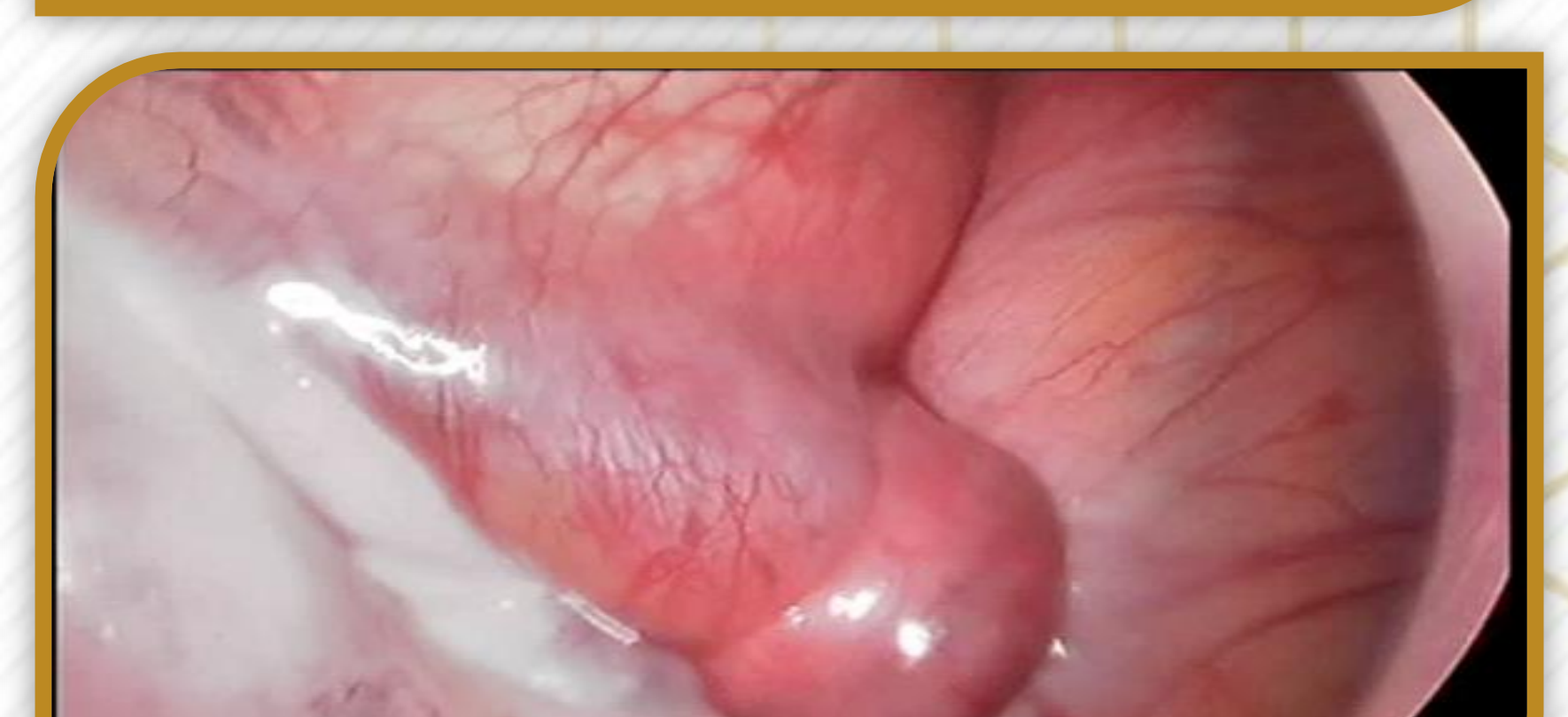
Although the diagnosis of ovarian torsion is difficult and challenging, careful analysis of presenting symptoms is very critical. Pelvic ultrasonography can provide information on ovarian cysts. Once ovarian torsion is suspected, surgery is the mainstay of diagnosis and treatment, preferably laparoscopic. Ovarian detorsion plus or minus cystectomy can be the treatment. Oophorectomy can also be a good option in cases of long infundibulopelvic and ovarian ligaments to reduce risk of retorsion. Timely diagnosis and management is the corner stone in the conservative management to save women's ovaries.

References

- McWilliams GD, Hill MJ, Dietrich CS., 3rd Gynecologic emergencies. Surg Clin North Am. 2008;88:265-83. vi. [PubMed] [Google Scholar]
- Muolokwu E, Sanchez J, Bercau JL, Sangi-Hagheykar H, Banszek T, Brandt ML, et al. The incidence and surgical management of paratubal cysts in a pediatric and adolescent population. J Pediatr Surg. 2011;46:2161-3. [PubMed] [Google Scholar]
- Huchon C, Fauconnier A. Adnexal torsion: A literature review. Eur J Obstet Gynecol Reprod Biol. 2010;150:8-12. [PubMed] [Google Scholar]
- Ding DC, Hsu S, Kao SP. Isolated torsion of the hydrosalpinx in a postmenopausal woman. JSL. 2007;11:252-4. [PMC free article] [PubMed] [Google Scholar]
- Antoniu N, Varras M, Akrivis C, Kitsiou E, Stefanaki S, Salamalekis E, et al. Isolated torsion of the fallopian tube: A case report and review of the literature. Clin Exp Obstet Gynecol. 2004;31:235-8. [PubMed] [Google Scholar]
- van der Zanden M, Nap A, van Kints M. Isolated torsion of the fallopian tube: A case report and review of the literature. Eur J Pediatr. 2011;170:1329-32. [PubMed] [Google Scholar]
- Schrager J, Robles G, Platz T. Isolated fallopian tube torsion: A rare entity in a premenarcheal female. Am Surg. 2012;78:118-9. [PubMed] [Google Scholar]
- Said MR, Bamigboye V. Twisted paraovarian cyst in a young girl. J Obstet Gynaecol. 2008;28:549-50. [PubMed] [Google Scholar]
- Argenta PA, Yeagley TJ, Ott G, Sondheimer SJ. Torsion of the uterine adnexa. Pathologic correlations and current management trends. J Reprod Med. 2000;45:831-6. [PubMed] [Google Scholar]
- Robertson JJ, Long B, Koefman A. Myths in the evaluation and management of ovarian torsion. J Emerg Med. 2017;52:449-56. [PubMed] [Google Scholar]



- Servaes S, Zurakowski D, Laufer MR, Feins N, Chow JS. Sonographic findings of ovarian torsion in children. Pediatr Radiol. 2007;37:446-51. [PubMed] [Google Scholar]
- Born C, Wirth S, Stähler A, Reiser M. Diagnosis of adnexal torsion in the third trimester of pregnancy: A case report. Abdom Imaging. 2004;29:123-7. [PubMed] [Google Scholar]
- Haque TL, Togashi K, Kobayashi H, Fujii S, Konishi J. Adnexal torsion: MR imaging findings of viable ovary. Eur Radiol. 2000;10:1954-7. [PubMed] [Google Scholar]
- Kawakami K, Murata K, Kawaguchi N, Furukawa A, Morita R, Tenzaki T, et al. Hemorrhagic infarction of the diseased ovary: A common MR finding in two cases. Magn Reson Imaging. 1993;11:595-7. [PubMed] [Google Scholar]
- Schlaff WD, Lund KJ, McAleese KA, Hurst BS. Diagnosing ovarian torsion with computed tomography. A case report. J Reprod Med. 1998;43:827-30. [PubMed] [Google Scholar]
- Kimura I, Togashi K, Kawakami S, Takakura K, Mori T, Konishi J. Ovarian torsion: CT and MR imaging appearances. Radiology. 1994;190:337-41. [PubMed] [Google Scholar]
- Hiller N, Appelbaum L, Simanovsky N, Lev-Sagi A, Aharoni D, Sella T, et al. CT features of adnexal torsion. AJR Am J Roentgenol. 2007;189:124-9. [PubMed] [Google Scholar]
- Naffaa L, Deshmukh T, Tumu S, Johnson C, Boyd KP, Meyers AB, et al. Imaging of acute pelvic pain in girls: Ovarian torsion and beyond. Curr Probl Diagn Radiol. 2017;46:317-29. [PubMed] [Google Scholar]
- Oelsner G, Cohen SB, Soriano D, Admon D, Mashiah S, Carp H, et al. Minimal surgery for the twisted ischaemic adnexa can preserve ovarian function. Hum Reprod. 2003;18:2599-602. [PubMed] [Google Scholar]
- Tsafir Z, Hasson J, Levin I, Solomon E, Lessing JB, Azem F, et al. Adnexal torsion: Cystectomy and ovarian fixation are equally important in preventing recurrence. Eur J Obstet Gynecol Reprod Biol. 2012;162:203-5. [PubMed] [Google Scholar]
- Harkins G. Ovarian torsion treated with untwisting: Second look 36 hours after untwisting. J Minim Invasive Gynecol. 2007;14:270. [PubMed] [Google Scholar]
- Shalev J, Goldenberg M, Oelsner G, Ben-Rafael Z, Bider D, Blankstein J, et al. Treatment of twisted ischemic adnexa by simple detorsion. N Engl J Med. 1989;321:546. [PubMed] [Google Scholar]
- Zweigig S, Perron J, Grubb D, Mishell DR., Jr Conservative management of adnexal torsion. Am J Obstet Gynecol. 1993;168(Pt 1):1791-5. [PubMed] [Google Scholar]
- Djavadian D, Braendle W, Jaenicke F. Laparoscopic oophorectomy for the treatment of recurrent torsion of the adnexa in pregnancy: Case report and review. Fertil Steril. 2004;82:933-6. [PubMed] [Google Scholar]
- Crouch NS, Gyampoh B, Cutner AS, Creighton SM. Ovarian torsion: To pex or not to pex? Case report and review of the literature. J Pediatr Adolesc Gynecol. 2003;16:381-4. [PubMed] [Google Scholar]
- Ozcan C, Celik A, Ozok G, Erdener A, Balik E. Adnexal torsion in children may have a catastrophic sequel: Asynchronous bilateral torsion. J Pediatr Surg. 2002;37:1617-20. [PubMed] [Google Scholar]
- Grunewald B, Keating J, Brown S. Asynchronous ovarian torsion - The case for prophylactic oophorectomy. Postgrad Med J. 1993;69:318-9. [PMC free article] [PubMed] [Google Scholar]
- Functional ovarian cysts and oral contraceptives. negative association confirmed surgically. A cooperative study. JAMA. 1974;228:68-9. [PubMed] [Google Scholar]
- Caillouette JC, Koehler AL. Phasic contraceptive pills and functional ovarian cysts. Am J Obstet Gynecol. 1987;156:1538-42. [PubMed] [Google Scholar]

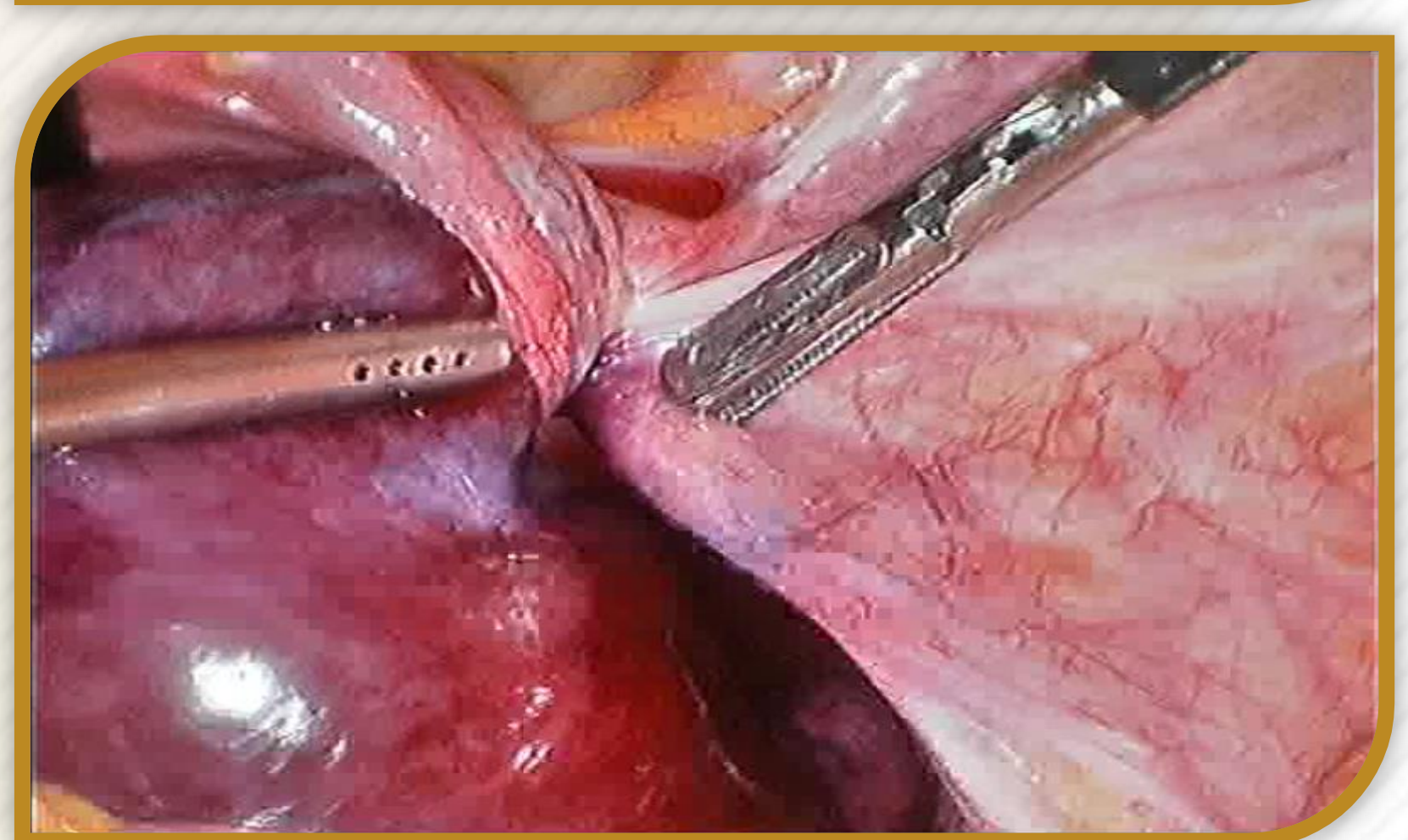
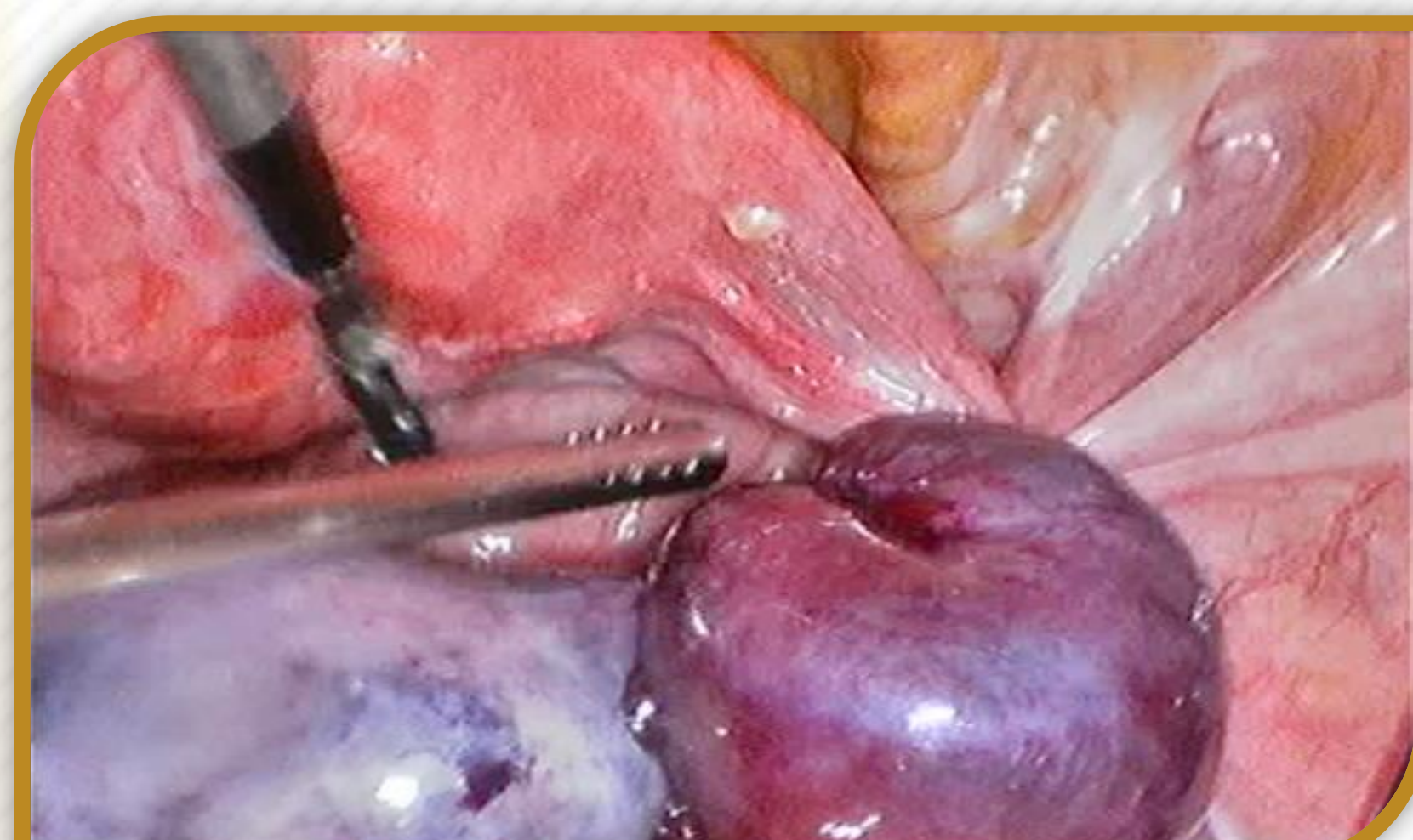


- Grimes DA, Godwin AJ, Rubin A, Smith JA, Lacarra M. Ovulation and follicular development associated with three low-dose oral contraceptives: A randomized controlled trial. Obstet Gynecol. 1994;83:29-34. [PubMed] [Google Scholar]
- Mishell DR., Jr Noncontraceptive benefits of oral contraceptives. J Reprod Med. 1993;38(12 Suppl):1021S-9S. [PubMed] [Google Scholar]
- Kaleli B, Aktan E, Gezer S, Korkali G. Reperfusion injury after detorsion of unilateral ovarian torsion in rabbits. Eur J Obstet Gynecol Reprod Biol. 2003;110:99-101. [PubMed] [Google Scholar]
- Dolgin SE. Acute ovarian torsion in children. Am J Surg. 2002;183:95-6. [PubMed] [Google Scholar]

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- Varras M, Tsikini A, Polyzos D, Samara CH, Hadjopoulos G, Akrivis CH, et al. Uterine adnexal torsion: Pathologic and gray-scale ultrasonographic findings. Clin Exp Obstet Gynecol. 2004;31:34-8. [PubMed] [Google Scholar]
- Oltmann SC, Fischer A, Barber R, Huang R, Hicks B, Garcia N. Cannot exclude torsion - A 15-year review. J Pediatr Surg. 2009;44:1212-6. [PubMed] [Google Scholar]
- Pansky M, Smorgick N, Herman A, Schneider D, Halperin R. Torsion of normal adnexa in postmenarchal women and risk of recurrence. Obstet Gynecol. 2007;109:355-9. [PubMed] [Google Scholar]
- Houry D, Abbott JT. Ovarian torsion: A fifteen-year review. Ann Emerg Med. 2001;38:156-9. [PubMed] [Google Scholar]
- Celik A, Ergun O, Aldemir H, Ozcan C, Ozok G, Erdener A, et al. Long-term results of conservative management of adnexal torsion in children. J Pediatr Surg. 2005;40:704-8. [PubMed] [Google Scholar]
- Germain M, Rarick T, Robins E. Management of intermittent ovarian torsion by laparoscopic oophorectomy. Obstet Gynecol. 1996;88:715-7. [PubMed] [Google Scholar]
- Buss JG, Lee RA. Sequential torsion of the uterine adnexa. Mayo Clin Proc. 1987;62:623-5. [PubMed] [Google Scholar]
- White M, Stella J. Ovarian torsion: 10-year perspective. Emerg Med Australas. 2005;17:231-7. [PubMed] [Google Scholar]
- Huchon C, Panel P, Kayem G, Schmitz T, Nguyen T, Fauconnier A, et al. Does this woman have adnexal torsion? Hum Reprod. 2012;27:2359-64. [PubMed] [Google Scholar]
- Kirkham YA, Lacy JA, Kives S, Allen L. Characteristics and management of adnexal masses in a Canadian pediatric and adolescent population. J Obstet Gynaecol Can. 2011;33:935-43. [PubMed] [Google Scholar]
- Sasso RA. Intermittent partial adnexal torsion after electrosurgical tubal ligation. J Am Assoc Gynecol Laparosc. 1996;3:427-30. [PubMed] [Google Scholar]
- Cohen SB, Wattiez A, Stockheim D, Seidman DS, Lidor AL, Mashiah S, et al. The accuracy of serum interleukin-6 and tumour necrosis factor as markers for ovarian torsion. Hum Reprod. 2001;16:2195-7. [PubMed] [Google Scholar]
- Daponte A, Pournaras S, Hadjichristodoulou C, Lialios G, Kallitsaris A, Maniatis AN, et al. Novel serum inflammatory markers in patients with adnexal mass who had surgery for ovarian torsion. Fertil Steril. 2006;85:1469-72. [PubMed] [Google Scholar]
- Laganà AS, Sofo V, Salmeri FM, Palmara VI, Triolo O, Terzić MM, et al. Oxidative stress during ovarian torsion in pediatric and adolescent patients: Changing the perspective of the disease. Int J Fertil Steril. 2016;9:416-23. [PMC free article] [PubMed] [Google Scholar]
- Dahmouh H, Anupindi SA, Pawel BR, Chauvin NA. Multimodality imaging findings of massive ovarian edema in children. Pediatr Radiol. 2017;47:576-83. [PubMed] [Google Scholar]
- Anthony EY, Caserta MP, Singh J, Chen MY. Adnexal masses in female pediatric patients. AJR Am J Roentgenol. 2012;198:W426-31. [PubMed] [Google Scholar]
- Wilkinson C, Sanderson A. Adnexal torsion - A multimodality imaging review. Clin Radiol. 2012;67:476-83. [PubMed] [Google Scholar]
- Lee EJ, Kwon HC, Joo HJ, Suh JH, Fleischer AC. Diagnosis of ovarian torsion with color doppler sonography: Depiction of twisted vascular pedicle. J Ultrasound Med. 1998;17:83-9. [PubMed] [Google Scholar]
- Albayram F, Hamper UM. Ovarian and adnexal torsion: Spectrum of sonographic findings with pathologic correlation. J Ultrasound Med. 2001;20:1083-9. [PubMed] [Google Scholar]