



PCOS'ta LOD Tedavisi

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MEDİPOL ÜNİVERSİTESİ KADIN HASTALIKLARI VE DOĞUM AD

PCOS'ta Tanı Kriterleri



All possible phenotypes based on the presence or absence of oligo anovulation, hyperandrogenemia, hirsutism, and polycystic ovary syndrome (PCOS).																
Features	Potential Phenotypes															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Hyperandrogenemia	+	+	+	+	-	-	+	-	+	-	+	-	-	-	+	-
Hirsutism	+	+	-	-	+	+	+	+	-	-	+	-	-	+	-	-
Oligo-anovulation	+	+	+	+	+	+	-	-	-	+	-	-	+	-	-	-
Polycystic ovaries	+	-	+	-	+	-	+	+	+	+	-	+	-	-	-	-
<u>NIH 1990 criteria</u>	✓	✓	✓	✓	✓	✓										
<u>Rotterdam 2003 criteria</u>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓						
<u>AE-PCOS 2006 criteria</u>	✓	✓	✓	✓	✓	✓	✓	✓	✓							
<i>Azziz. AE-PCOS Society report on PCOS phenotype. Fertil Steril 2009.</i>																

**KADINLARDA EN SIK GÖRÜLEN ENDOKRİNOPATİDİR
HETEROJEN YAPIDADIR
%4-10**

PCOS 'DA TEDAVİ



MEDİKAL TEDAVİ

CERRAHİ TEDAVİ

PCOS'da Cerrahi Tedavi Tarihçesi



- Stein and Leventhal, 7 kadında **Overin Wedge Rezeksiyonunu** gerçekleştirerek, ovulasyon ve gebelik elde etmişler ve bunu **Stein- Leventhal Sendromu** olarak rapor etmişlerdir.

Stein IF, Leventhal ML. Am J Obstet Gynecol , 1935.

- Ol ajanlarının kullanımı cerrahi tedavi



- Laparoskopik teknikler cerrahi tedavi



Donesky BW, Adashi EY. Fertil Steril, 1995.

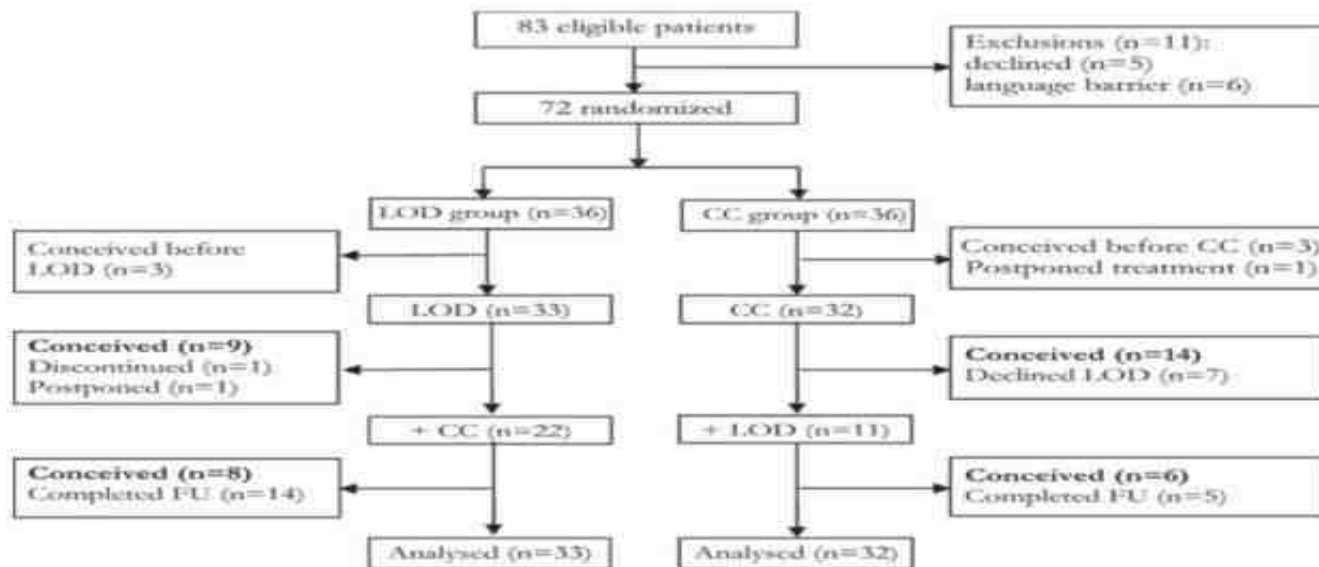


PCOS'ta Tedavi Seçenekleri

- Yaşam biçiminde değişiklik : %5-10 Zayıflama
- First Line Tedavi: CC veya CC+Metformin, AI
- Second Line Tedavi: Gonadotropin veya **Laparoskopik Ovaryan Diatermi (LOD)**
- Third Line Tedavi: IVF

The Thessaloniki ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group March 2-3, 2007, Thessaloniki, Greece*

Randomized controlled trial comparing laparoscopic ovarian diathermy with clomiphene citrate as a first-line method of ovulation induction in women with polycystic ovary syndrome



LOD is not superior to CC as a first-line method of OI in women with PCOS

Amer SA, Li TC. Hum Reprod 2009



CC REZİSTANSI

150mg CC 5 gün verildiği halde **35 gün** içinde
follikülogenezisin görülmemesi

%30

	LOD	GONADOTROPİN
AVANTAJLARI	6 siklus gn tdivsine benzer gebelik oranları (%55) Tek tedavi ile çoklu ovulasyon sağlanması Ek bir prosedür gerektirmemesi Minimal takip Monoovulatuvar siklus sağlanması OHSS riskinin bulunmaması Ucuz Tubal geçirgenlik değerlendirme ve fertilitiyi etkileyen (endometriosis, adezyon gibi) faktörleri tedavisi	Ovulasyon olasılığının daha yüksek olması LOD ile benzer gebelik oranları Adezyon riskinin bulunmaması
DEZAVANTAJLARI	Cerrahi riskler (anestezi vs) Adezyon Overyan atrofi	Pahalı Yakın takip Aylık tedavi Çoğul gebelik riski

Laparoscopic drilling by diathermy or laser for ovulation induction in anovulatory polycystic ovary syndrome (Review)

Farquhar C, Brown J, Marjoribanks J



2012

There was no evidence of a significant difference in rates of clinical pregnancy, live birth or miscarriage in women with clomiphene-resistant PCOS undergoing LOD compared to other medical treatments. The reduction in multiple pregnancy rates in women undergoing LOD makes this option attractive. However, there are ongoing concerns about the long-term effects of LOD on ovarian function.

LOD Başarısını Etkileyen Faktörler



- BMI > 30 kg/m²
- Diğer İnfertilite Sebeplerinin Bulunması

Gjonnaess H. Acta Obstet Gynecol Scand, 1994.

- Preoperatif FSH Değerleri

Sasaki Y et al. Fertil Steril, 2014.

LOD Tekniđi

Laparoskopik giriři takiben over kapsülünde multiple deliklerin açılmasıdır.



ENERJİ MODALİTELERİ

ENERJİ MİKTARI

UNİLATERAL /BİLATERAL

**ALTERNATİF
YÖNTEMLERİ**

LOD Teknigi / Enerji Modaliteleri



■ Elektrokoter Monopolar

Bipolar

Hendrinks ML et al. Fertil Steril, 2010.

(CO₂ Laser vs Monopolar vs Bipolar)

Fernandez H et al. Fertil Steril, 2010

(5 F Versapoint)

■ Laser Argon

Heylen SM et al. Hum Reprod, 1994.

(Vaporization vs Perforation)

CO₂

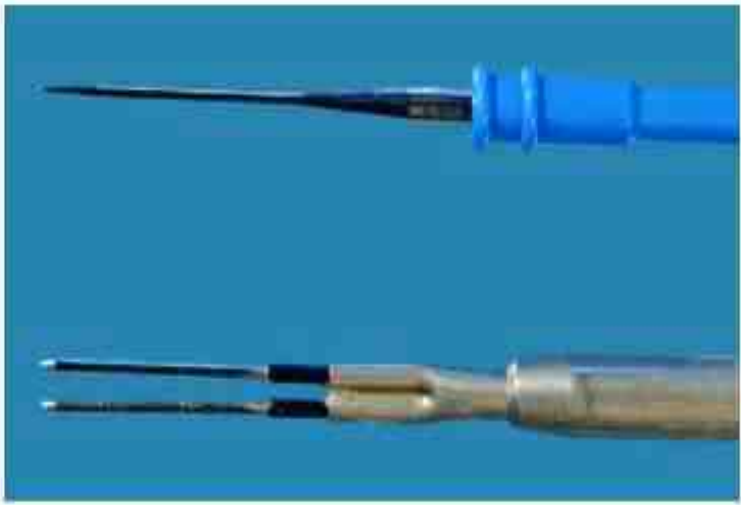
Ostrzenski. Int J Fertil, 1992.

Nd-YAG

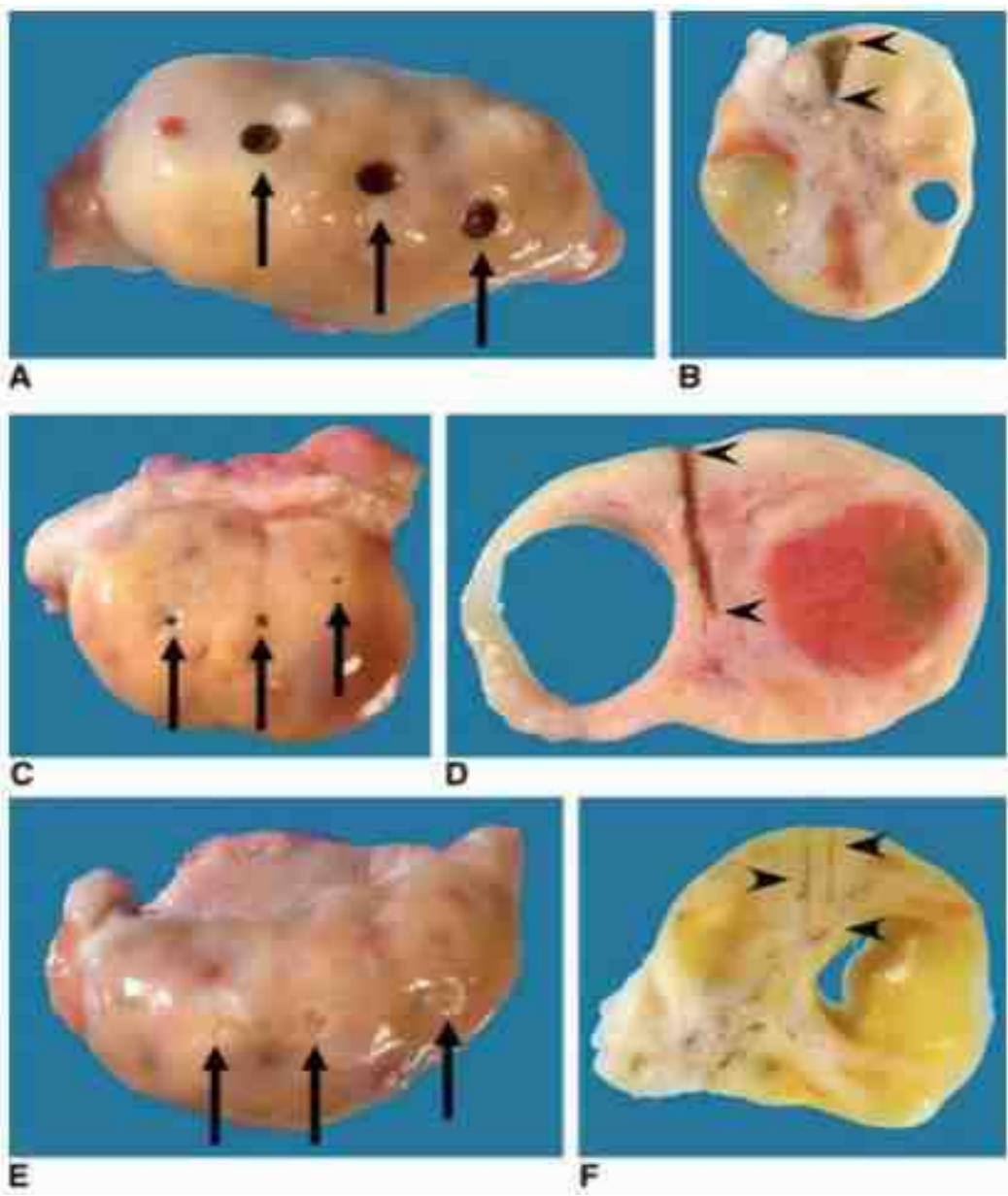
Gurgan T et al. Obstet Gynecol , 1992.

■ Harmonic scalpel

Takeuchi S et al. J Reprod Med, 2002.



Hendriks, Extensive damage after bipolar ovarian drilling. Fertil Steril 2010.



Fernandez, Bipolar laparoscopic ovarian drilling. Fertil Steril 2010.

LOD Teknigi / Enerji Miktarı

$$E (J) = \text{Voltaj (W)} \times \text{Delik sayısı} \times \text{Süre (sn)}$$

SABİT TERMAL DOZ

600 J: 30W X 4 X 5 sn

Amer SAK et al. Hum Reprod, 2003.

AYARLANMIŞ TERMAL DOZ

480-1080 J:

60 J/cm³

Zakherah M et al. Fertil Steril, 2011.



LOD Teknigi / Enerji Miktarı



Reproductive outcome	Group A (n = 58) ^a	Group B (n = 57) ^a	Relative risk, odds ratio (95% CI)	P value
Total ovulation rate ^b	225/275 (81.8)	180/289 (62.2)	2.05 (1.3–3.1)	.001
First cycle	38/58 (65.5)	30/57 (52.6)	1.77 (0.79–3.96)	.05
Second cycle	46/53 (86.7)	35/54 (64.8)	2.17 (1.5–4.53)	.01
Third cycle	42/49 (85.7)	36/51 (72.5)	3.84 (1.18–5.37)	.02
Fourth cycle	38/43 (88.3)	29/46 (63.1)	2.19 (1.12–4.33)	.01
Fifth cycle	33/38 (86.8)	26/42 (61.9)	2.11 (1.19–4.52)	.01
Sixth cycle	28/34 (82.3)	24/39 (61.5)	3.23 (1.27–6.54)	.01
Pregnancy rate per cycle ^c	30/275 (10.9)	21/289 (7.2)	2.11 (1.02–4.59)	.05
Cumulative pregnancy rate ^d	30/58 (51.7)	21/57 (36.8)	2.37 (1.04–5.71)	.01
First-trimester abortion rate	4/30 (13.3)	3/21 (14.2)	1.05 (0.16–6.91)	.9
Patients with three or more regular cycles (28 ± 7 d)	51/58 (87.9)	43/57 (75.4)	2.38 (1.09–3.47)	.05
Postdrilling pelvic adhesions (grade 1) ^e	8/28 (28.5)	10/36 (27.7)	1.05 (0.23–5.82)	.9

Zakherah M et al. Fertil Steril, 2011

LOD Teknigi



- Cut  Coagulation
- Batın içi 200 cc Hepariniz RL
- Over arka yüzüne (Fossa ovarika yüzüne)

LOD Unilateral/Bilateral



Frequency distributions of patients by ovulation and pregnancy.

Period after LOD	ULOD group (n = 49)		BLOD group (n = 47)	
	Ovulation	Pregnancy	Ovulation	Pregnancy
1 month	36 (73%)	10 (20%)	23 (49%)	4 (9%)
6 months	40 (82%)	27 (55%)	30 (64%)	21 (45%)

BLOD, bilateral laparoscopic ovarian drilling; LOD, laparoscopic ovarian drilling; n, number; ULOD, unilateral laparoscopic ovarian drilling.

Frequency distributions of patients by ovulation and side of the larger ovary.

Larger ovary	ULOD group (n = 49)			BLOD group (n = 47)		
	Ovulation (n = 40)	No ovulation (n = 9)	Total	Ovulation (n = 30)	No ovulation (n = 17)	Total
Right, n (%)	35 (100%)	0 (0%)	35 (100%)	23 (88%)	3 (12%)	26 (100%)
Left, n (%)	5 (36%)	9 (64%)	14 (100%)	7 (33%)	14 (67%)	21 (100%)

BLOD, bilateral laparoscopic ovarian drilling; n, number; ULOD, unilateral laparoscopic ovarian drilling.

6 AY → 12 AY

Sunj M et al. Hum Reprod, 2013.

Sunj M et al. Gynecol Endocrinol, 2014.

ALTERNATİF YÖNTEMLER



Minilaparoscopic ovarian drilling under local anesthesia in patients with polycystic ovary syndrome

Zullu et al. Fertil Steril, 2000.

Is single-port laparoscopy for benign adnexal disease less painful than conventional laparoscopy? A single-center randomized controlled trial

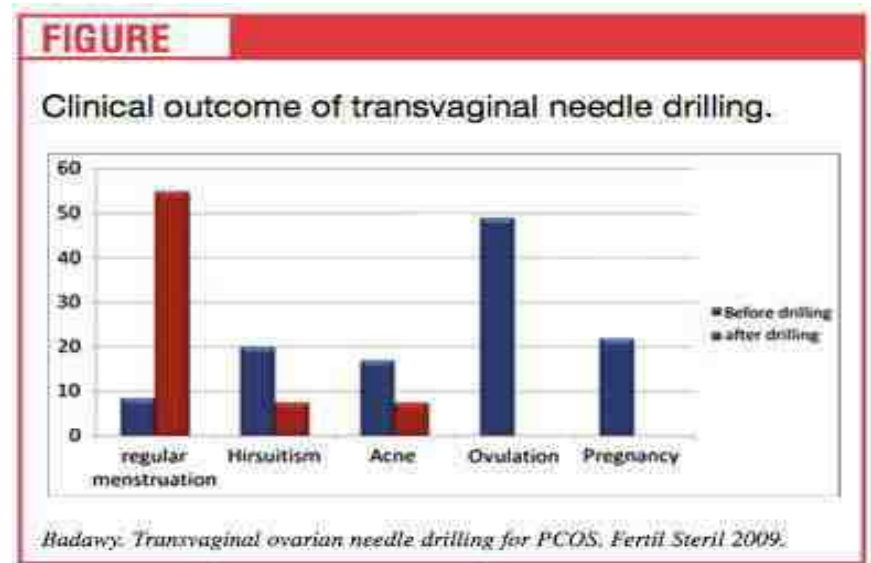
Hoyer-Sorensen C et al. Fertil Steril, 2012

ALTERNATİF YÖNTEMLER



Ultrasound-guided transvaginal ovarian needle drilling (UTND) for treatment of polycystic ovary syndrome: a randomized controlled trial

16G 35 cm keskin uçlu iğne
Sürekli vakum uygulanarak
Transvajinal 3-6 delik
Küçük folliküller aspire edilerek
2-3 saat sonra taburcu



Badawy A et al. Fertil Steril et al, 2009

ALTERNATİF YÖNTEMLER



TABLE

Outcome after needle and laparoscopic ovarian drilling.

	Needle drilling group (n = 82)	Laparoscopic drilling group (n = 81)	t	P
Regular menstruation (%)	41/75 (54.7)	43/72 (59.7)	$\chi^2 = 0.36$	.53
Improved hirsutism (%)	8/20 (40)	8/19 (42.1)	$\chi^2 = 0.02$	.89
Improved acne (%)	8/17 (47.1)	6/14 (42.9)	$\chi^2 = 0.05$	.81
Regular ovulation (%)	40/82 (48.8)	45/81 (55.6)	$\chi^2 = 0.85$	.35
Pregnancy (%)	18/82 (21.9)	20/81 (24.7)	$\chi^2 = 0.88$	.10
Serum LH, mIU/mL	7.2 $\pm$ 1.93	6.2 $\pm$ 1.83	2.01	.19
Serum FSH, mIU/mL	4.1 $\pm$ 0.95	3.9 $\pm$ 0.85	1.64	.28
Serum LH/FSH ratio	1.7 $\pm$ 1.11	1.9 $\pm$ 1.32	1.71	.66
Serum T, nmol/mL	1.0 $\pm$ 0.52	1.3 $\pm$ 0.61	0.12	.41

Badawy. Transvaginal ovarian needle drilling for PCOS. Fertil Steril 2009.

Badawy A et al. Fertil Steril et al, 2009

ALTERNATİF YÖNTEMLER



Transvaginal ovarian drilling: a new surgical treatment for improving the clinical outcome of assisted reproductive technologies in patients with polycystic ovary syndrome

Ferrarti AP et al. Fertil Steril, 2001.

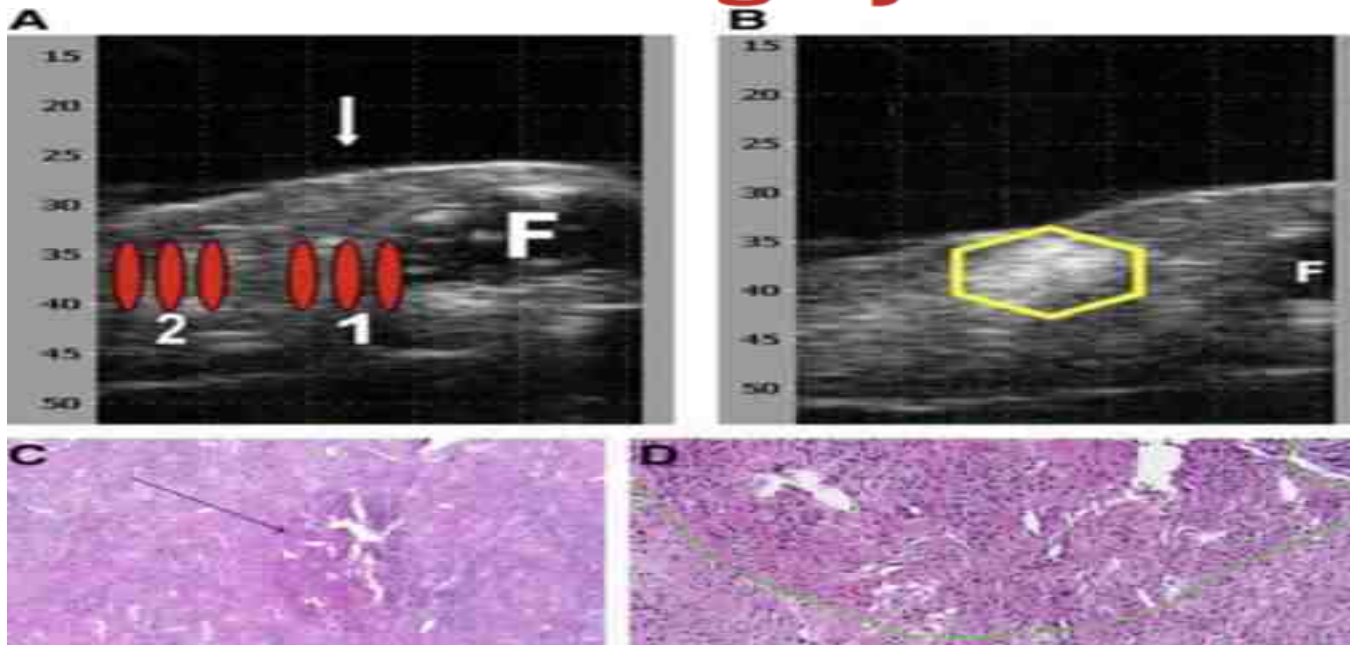
Improved cycle outcomes after laparoscopic ovarian diathermy in hyper-responder patients with previous ART failure.

Pabuccu R et al. Gynecol Endocrinol, 2014

ALTERNATİF YÖNTEMLER



High-intensity focused ultrasound for potential treatment of polycystic ovary syndrome: toward a noninvasive surgery



KİME

CC REZİSTAN PCOS 2ND LİNE

BMI<30

EK İNFERTİLİTE NEDENİ Ø

CİDDİ PCOS IVF ÖNCESİ

NASIL

MONOPOLAR ELEKTROKOTER

AYARLANMIŞ DOZLARDA

(60J/cm³)

UNİLATERAL?

GELECEKTE

TRANSVAJİNAL

USG GÜİDED



TEŞEKKÜRLER