

# Spontaneous Pregnancy After Laproscopic Ovarian Drilling In Infertile patient with Polycystic Ovarian syndrome at university hospital-Mukalla-Yemen

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## Abstract:

**Background:** Polycystic ovary syndrome (PCOs) is the most common reproductive disorder of women in reproductive age and the major cause of infertility. Laproscopic ovarian drilling (LOD) might improve the ovulation and pregnancy outcomes.

**Objectives:** To find out the effects of LOD in infertile PCOs patients to improve spontaneous pregnancy rate.

**Patients and Methods:** It is prospective study done in the period from first January 2014 to 31 December 2014 in Hadramout University hospital for maternity and childhood in Mukalla city in Yemen. Infertile patients with PCOs underwent laproscopic ovarian drilling by electrocautry and followed for 6 months post surgical procedure.

The independent variables are: age group, duration of infertility in Year, type of infertility ( primary or secondary ).

**Results:** A total number of 74 infertile PCOs women were underwent LOD in Hadramout University hospital for maternity and childhood. Forty cases (54.1%) were primary infertile and 34 cases (45.9%) were secondary infertile. The spontaneous pregnancy after LOD were achieved in 25 cases of the whole studied cases (33.8%). The percentage of spontaneous pregnancy in primary infertility is 35% (14/40). In secondary infertility it is 32.35% (11/34), the higher percentage of pregnancy were in age 31-35 years 7 cases (20.59%). Regarding duration of infertility the spontaneous pregnancy in primary infertility was higher in duration 5-7 years 6 cases (15%) and lower in duration of >7 years 3 cases (7.5%). In secondary infertility spontaneous pregnancy was higher in duration 5-7 years 5 cases (14.70%) while lowest percentage in duration > 7 years 2 cases (5.88%).

**Conclusion:** LOD in PCOs infertile patients activate the ovary and increase spontaneous pregnancy rates. Primary infertility had pregnancy rate more than secondary infertility, and 5-7 years infertile period were the more period responded to LOD and pregnancy achieved. Age 20-25 years in primary infertility had pregnancy rate more than other age groups. While in secondary infertility age group 31-35 years had the higher pregnancy rates.

**keywords :** PCOs, LOD, infertility.

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## الحمل التلقائي بعد إجراء عملية الكوي الجراحي للمبايض بالمنظار لمرضى العقم بدأ المبيض المتعدد الاكياس

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**الهدف:** تأثير الكوي بالمنظار الجراحي على المبايض متعددة الاكياس لحصول الحمل التلقائي.

**الأسلوب:** دراسة وصفية مستقبليّة تمت في الفترة من 2014-1-1 الى 2014-12-31 في مستشفى جامعة حضرموت لطب النساء والولادة ولأطفال المكلّا - اليمن مرضى العقم المصابين بدأ المبيض المتعدد الاكياس أخضعوا لإجراء الكوي الجراحي بالمنظار ثمّ تمت متابعتهم لفترة ستة أشهر بعد العملية لغرض التأكّد لحصول الحمل التلقائي لهم ، المتغيرات لهذه الدراسة كانت الفئة العمرية ، فترة العقم بالسنيين ، نوع العقم ( أولي ، ثانوي ).

**النتائج :** عدد المرضى الذين تم إجراء الكوي الجراحي لهم بالمنظار 74 مريضة . أربعون منهم بنسبة (54,1%) كانوا يشكون من العقم الأولي ، وأربعة وثلاثون حالة بنسبة (45,9%) كانوا يشكون من العقم الثانوي. عدد المرضى الذين حصل لهم الحمل التلقائي بعد عملية المنظار الجراحي كانوا 25 حالة من العدد الكلي 74 بنسبة (33,8%). نسبة الحمل في العقم الأولي كانت (35%) بينما العقم الثانوي بلغت نسبة الحمل (32,35%).

نسبة الحمل كانت الأعلى في الفئة العمرية (35-31%) في العقم الثانوي بنسبة (20,59%). بنسبة لفترة العقم بالسنيين حصول الحمل في العقم الأولي بعد المنظار كانت أعلى في الفترة من 5-7 سنين ، 6 حالات بنسبة (15%) وأقلّ نسبه في العقم الأولي كانت في الفترة الأكثر من سبع سنوات، 3 حالات بنسبة (7,5%). أما العقم الثانوي فكانت نسبة الحمل أعلى في الفترة من 5-7 سنين، 5 حالات بنسبة (14,70%) وأقلّ نسبة للحمل في هذه الفئة كانت ما بعد 7 سنوات (5,88%).

**الاستنتاجات:** الكي الجراحي بالمنظار لمبايض مرضى العقم المصابين بدأ المبايض المتعدد الاكياس ينشط المبايض ويتم حصول الحمل التلقائي. العقم الأولي أظهر نسبة أعلى للحمل أكثر من العقم الثانوي . الفترة من 5-7 سنين عقم هي الفترة الأكثر استجابة لحصول الحمل بعد الكي الجراحي.

الفئة العمرية من 20-25 سنة العقم الأولي أظهر أكبر نسبة للحمل فيها في العقم الأولي ، بينما العقم الثانوي كانت الفئة العمرية من 31-35 في العقم الثانوي كانت الأعلى نسبة لحصول الحمل.

**الكلمات المفتاحية:** العقم ، الكوي الجراحي بالمنظار ، المبايض المتعدد الاكياس.

## Introduction:

Polycystic ovarian syndrome (PCOs) is the most common reproductive disorder of fertility which affect 5-10% of women in reproductive age and is the major cause of infertility<sup>(1)</sup>.

PCOs was popularized since 1935 as Stein-leventhal syndrome whom described complex symptoms associated with an ovulation<sup>(2)</sup>, obesity, amenorrhea, hirsutism, infertility and bilateral enlarged cystic ovaries. They depend for diagnosis on observing enlarged sclerocystic ovaries at laparotomy in women who either an ovulated or hirsutis or both<sup>(3,4)</sup>. Their approach was bilateral wedge resection (removing one half to three fourth of each ovary)<sup>(2)</sup>.

Diagnosis of PCOs depended on clinical as well as paraclinical, and the presence of 2 major criteria or one major and two minor criteria is enough for diagnosis<sup>(5,6,7,8)</sup>. Major criteria include an ovulation, menstrual disturbance, hirsutism, acne and ultrasound evidence of PCOs. Minor criteria including insulin resistance, obesity and elevated LH:FSH ratio<sup>(5,6,7,9)</sup>. Pelvic ultrasound either trans-vaginal (TVU) or trans-abdominal (TAU) (with TVU is better and more accurate). By ultrasound the presence of more than 10 peripheral ovarian cysts of less than 10 mm size with stromal thickening and increase in ovarian volume<sup>(4,7)</sup>.

Burghen et al. in 1980 describe the association of PCOs and insulin resistance which guided to use insulin lowering agents for treatment of PCOs<sup>(10)</sup>. Velazquez et al. in 1990 started the use of metformin for treatment of PCOs<sup>(11)</sup>.

For several decades ovarian wedge resection was the only treatment of PCOs<sup>(2,12)</sup>, and the introduction of clomiphene citrate (C.C.) in the 1960 created a new and effected method by which the wedge resection could be avoided and pregnancy achieved<sup>(9,13,14,15)</sup>.

Anovulation is the characteristic feature of PCOs. Ovulation can be induced with C.C., and approximately 80% of patients with PCOs will ovulate, pregnancy only occurred in less than 40% of patients<sup>(13,14,15)</sup>.

Laparoscopic ovarian drilling was used as alternative surgical technique in PCOs patients with resistance to C.C. The technique including many different approach.<sup>(16,17,18,19,20,21)</sup>

Similar results have been obtained using multifocal ovarian cautery which aimed to decrease both intra-ovarian and systemic androgen concentration by ablating some of hypertrophied stromal PCOs<sup>(22)</sup>.

This approach lead to spontaneous ovulation in 75% of patients & 72% conceived within two years<sup>(19,23)</sup>. It is advantage over wedge resection decrease the post operative adhesion, and fertility will not affected as with wedge resection<sup>(24,25)</sup>.

## Objectives:

To find out the effects of LOD in infertile PCOs women regarding spontaneous pregnancy.

## Patients and Methods:

### Patients:

The study was prospective including 74 PCOs women whom had > 1 year infertility in the period from first January 2014 to 31 December 2014 in the Hadramout University hospital for maternity and childhood in Mukalla city in Yemen.

Diagnosis of PCOs depended on clinical (disturbance of menstruation, anovulation, acne and hirsutism) and paraclinical (hormonal study of LH:FSH > 2 and raised testosterone).

Ultrasound was done for all cases and the ovaries of these cases contains > 10 cysts of less than 12mm.

All the patients were underwent ovarian stimulation by C.C. for at least 3-4 cycles, before LOD. The dose of C.C. started by 100mg per day, then increased next cycle by 50mg till 200mg per day were used. The dose of C.C started from 3rd day of cycle and all the patients were resistant to ovulation and no pregnancy achieved.

The independent variables are: age group, duration of infertility in Year, type of infertility ( primary or secondary ). Age was divided into three groups: 20-25 years, 26-30 years and 31-35 years. Duration of infertility were classified to three groups: 1-4 years, 5-7 years and more than 7 years.

All the 74 PCOs infertile women were followed during the first six months after LOD intervention.

### Laparoscopic Techniques:

Several techniques were used either, argon laser or mono-polar diathermy. In this study mono-polar diathermy was used, three ports of entry were used ( sub-umbilical, two at lower abdomen in both iliac fossae).

After inflation of abdominal cavity by CO<sub>2</sub> through verrous needle. A 10mm laparoscope was inserted through sub-umbilical entry. A grasping forceps passed through one of the accessory entry at lower abdomen of 5mm to grasp the utero-ovarian ligament and left ovary away from the bowel.

Then third entry was used to introduce the diathermy probe which had distal stainless needle at right angle 7mm long and 4mm width. The probe connected to electrosurgical unit. A mono-polar coagulating current at 40W power was used, and the needle puncture the ovary for 5mm depth for 5 seconds, 7-10 punctures were done in each ovary, and each ovary was cooled after puncture by normal saline. After finish both ovaries drilling the CO2 allowed to pass out through the valve in the trocar sheath, after that trocars removed from the port of entry and skin was closed by fine vicryl sutures. Questionnaire was designed to collect data by patient interviewed, data entry and analysis was done by using frequency and percentage.

**Results:**

*Patient characteristics:*

Out of the 74 studied PCOs women ; there are 40 primary infertile (54.1%) and 34 secondary infertile (45.9%). The mean age of the studied women is 28.9 years (26.8 years for primary infertile and 30.9 years in secondary fertile.

The highest percentage of the primary infertility

were in age group 26-30 years(60%) versus (41.17%) in secondary infertility in the same age group and the higher percentage in secondary infertility were in age group 31-35 years (52.95%) versus 10% in primary infertility in the same age group. While the least percentage were found in secondary infertility in age group 20-25 years was 5.88% versus 30% in primary infertility in the same age group . The higher percentage of patients in both types of infertility were found in age group 26-30 years (51.35%) and least percentage of patients in both types of infertility were in age group 20-25 years (18.92%).

Regarding the infertility period; the higher percentage in primary infertility were in the period 5-7 years, compared with secondary infertility (55% and 44.12% respectively), while the least percentage in primary and secondary infertility was in duration of >7 years (15% and 26.47% respectively) and both types approximately similar in duration of infertility 1-4 years (30% and 29.41% respectively).

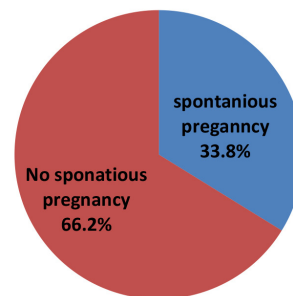
The higher percentage according to duration of infertility in the whole patients studied were in age group 5-7 years period (50%) and the least percentage was in period >7 years with (20.27%). Table No 1.

**Table 1: Distribution of the studied infertile POCs women by type of infertility, age group and period of infertility, Jan-Dec 2014, Hadramout University Hospital.**

Patient characteristics		Primary infertility (n=40)		Secondary infertility (N= 34)		Total (N=74)	
		No	(%)	No	(%)	No	(%)
Age group	20-25 years	12	(30%)	2	(5.88%)	14	(18.92%)
	26-30 years	24	(60%)	14	(41.17%)	38	(51.35%)
	31-35 years	4	(10%)	18	(52.95%)	22	(29.73%)
Infertility period	1-4 years	12	(30%)	10	(29.41%)	22	(29.73%)
	5-7 years	22	(55%)	15	(44.12%)	37	(50%)
	> 7 years	6	(15%)	9	(26.47%)	15	(20.27%)

*The spontaneous pregnancy rate and proportion:*

The spontaneous pregnancy were achieved in 25 cases in the studied cases Given the spontaneous pregnancy rate among the studied infertile PCOs is 33.8% (Figure No. 1)



**Fig.1: Spontaneous pregnancy rate among 74 studied infertile PCOs , Hadramout University Hopsital, 2014**

The proportion of the spontaneous pregnancy was higher in primary infertility (35%) than secondary infertility ( 32.35%).

Regarding age groups; spontaneous pregnancy was higher in primary infertility in age group 20-25 years with 17.5% versus no pregnancy in secondary infertility in this age group and the lower percentage in primary infertility in age group 31-35 years was 2.5% versus 20.59% in secondary infertility in the same age group, while in age group 26-30 years the percentage

of pregnancy in primary and secondary infertility was 15%,11.76% respectively

Regarding infertility period; the higher percentage of spontaneous pregnancy were in duration 5-7 years in both types of infertility and the least percentage were found in > 7 years duration of infertility in both types, while in duration 1-4 years of infertility both types were similar in achieved spontaneous pregnancy. (Table No. 2)

**Table 2: The proportion of spontaneous pregnancy by type of infertility, age group and the infertility period**

Patient characteristics		Primary infertility (n=40)		Secondary infertility (N= 34)		Total (N=74)	
		No	(%)	No	(%)	No	(%)
Age group	20-25 years	7	(17.5%)	0	(0%)	7	(9.5%)
	26-30 years	6	(15%)	4	(11.76%)	10	(13.5%)
	31-35 years	1	(2.5%)	7	(20.59%)	8	(10.8%)
	<b>Total</b>	<b>14</b>	<b>(35%)</b>	<b>11</b>	<b>(32.35%)</b>	<b>25</b>	<b>(33.8%)</b>
Infertility period	1-4 years	5	(12.5%)	4	(11.77%)	9	(12.1%)
	5-7 years	6	(15%)	5	(14.70%)	11	(14.90%)
	> 7 years	3	(7.5%)	2	(5.88%)	5	(6.8%)
	<b>Total</b>	<b>14</b>	<b>(35%)</b>	<b>11</b>	<b>(32.35%)</b>	<b>25</b>	<b>(33.8%)</b>

## Objectives:

In this study primary infertility represents 54.1%, while secondary infertility 45.9%, which similar to other study done by other researchers(4,26,27). This due to that number of PCOs patients will be decreased with secondary infertility because previous pregnancy reduced time for exposure to unopposed estrogen, while primary infertility associated with unovulatory cycle for long time with increased them to unopposed estrogen<sup>(28)</sup>.

The age ranged from 20-35 years in this study which was similar to other study Jamal et.al.<sup>(27)</sup> and Tokahashi,T et al.<sup>(24)</sup>.

However the higher percentage 51.35% of PCOs patients were in age 26-30 years in this study, because patients after 25 years old is worry about conception and seeks faster treatment to achieve pregnancy, and LOD had faster effect on ovary with good prognosis<sup>(16)</sup>.

Duration of infertility ranged from 1 to more than 7 years which similar to other study done by other researchers<sup>(21,23,29)</sup>. Szczepanska et.al. also had similar

results to our study<sup>(28)</sup>, but our study was not similar to the study done by Sutter-Young et.al.<sup>(30)</sup> were their duration ranged from 2-6 years.

The pregnancy rate in this study was 33.8% (35% in primary infertility and 32.4% in secondary infertility), this was similar to other study done by Tasaka 1990<sup>(20)</sup> and Kovacs 1991<sup>(19)</sup> but it is better that study done by Naether 1993<sup>(17)</sup>.

Armar 1993<sup>(18)</sup> reported pregnancy rate 44% better than this study, the variation in pregnancy rate maybe due to that he had low population size.

Greenblatt 1987<sup>(29)</sup> had 66% pregnancy rate but their duration of follow up were more than 18 months which will be sufficient to the ovarian tissue to respond to ovulation and pregnancy.

Failure rate of pregnancy in this study was 66.2% which similar to other study done by Sutter-Young et.al. with percentage 66%<sup>(30)</sup> and Stegmann et.al. 66.6%<sup>(31)</sup>.

Concerning pregnancy rate in age groups and duration of infertility in this study age group 26-30 years old had higher pregnancy rate than other age

group but in primary infertility age 20-25 years had the higher pregnancy rate, while the lower pregnancy rate was in age 31-35 years.

While in secondary infertility age 31-35 years had the higher rate of pregnancy, while 0% pregnancy rate was seen in age 20-25 years. This variation is due to that the patients studied in age 26-30 years in primary infertility had the higher percentage than other age group while in secondary infertility age group 20-25 years had only 2 patients which lead to this variation in results.

Concerning the duration period of infertility, the higher pregnancy rate was seen in duration 5-7 years in both types of infertility, while the lower pregnancy rate was seen in duration more than 7 years in both groups with no significance difference between types of infertility, this similar to other study done by Li-guor et.al.<sup>(32)</sup>.

### Conclusion:

LOD in PCOs infertile patients activate the ovary and increase spontaneous pregnancy rates. Primary infertility had pregnancy rate more than secondary infertility, and 5-7 years infertile period were the more period responded to LOD and pregnancy achieved. Age 20-25 years in primary infertility had pregnancy rate more than other age groups. While in secondary infertility age group 30-35 years had the higher pregnancy rates.

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