

Outcome Following Ovarian Drilling in Nigerian Women with Polycystic Ovary Syndrome: A Systematic Review

Nkeiruka Ameh¹, Adebiji G. Adesiyun¹, Jude E. Okohue², Nathaniel D. Adewole³

¹Department of Obstetrics and Gynaecology, Ahmadu Bello University Teaching Hospital, Zaria, ²Department of Obstetrics and Gynaecology, Madonna University Teaching Hospital, Rivers State, ³Department of Obstetrics and Gynaecology, University of Abuja Teaching Hospital, Abuja, Nigeria

Abstract

Background: Polycystic ovary syndrome (PCOS) is a common condition characterized by endocrinopathies which can lead to infertility. Various modalities of treatment have been employed including ovarian drilling, but the outcome of such ovarian drilling in Nigerian women is not known. **Aim:** This is a systematic review of the outcome of ovarian drilling on the menstrual pattern and pregnancy rate in Nigerian women. **Materials and Methods:** Google scholar and PubMed databases were searched for studies that relate to PCOS management using ovarian drilling and other modalities in Nigeria. The citation lists of relevant articles and studies were also searched. Case reports, retrospective studies, and prospective studies were included. Review articles, systematic reviews, and meta-analysis were excluded. Six studies were found to be suitable and consisted of two case reports and prospective studies each, respectively, and one clinical trial and retrospective study each, respectively. **Results:** There were a total of 107 patients aged 17–49 years. While all the patients presented with a complaint of abnormal menstruation, 50%–70% complained of inability to conceive. All the patients had used clomiphene citrate as first-line drug to manage their complaints. Ovarian drilling was carried out using the conventional unipolar diathermy and 4 or more drills per ovary. Following the procedure, 76% resumed normal menstruation and 30% conceived. **Conclusion:** Reports of ovarian drilling in Nigeria reveal a positive outcome but the number of published studies are few and quality of evidence low. Further well-designed studies including randomized controlled trials are needed to make definite conclusions.

Keywords: Outcome, ovarian drilling in Nigeria, polycystic ovary syndrome

INTRODUCTION

Polycystic ovary syndrome (PCOS) is a condition seen in 5%–10% of women in reproductive age.^[1] The Rotterdam criteria are defined by the presence of oligomenorrhea or amenorrhea, PCOS and clinical or endocrine signs of hyperandrogenism. The presence of two or more of the above conditions defines PCOS.^[2] PCOS patients present with complaints of menstrual irregularities and infertility. Common findings on examination usually include obesity, male pattern hair distribution, and ultrasound finding of enlarged polycystic ovaries.^[3,4]

Several treatment options exist for PCOS. The first line of treatment is usually medical, followed by surgical options. Medical treatment includes administration of clomiphene citrate, metformin, and gonadotrophins.^[2,4] A few studies have revealed the use of a combination of the medical modalities.^[4]

In Nigeria, ovarian drilling is commonly used in the treatment of PCOS but definite conclusions on the outcome of this treatment is uncertain. This is a systematic review of outcomes of ovarian drilling in Nigerian women with PCOS over a 30-year period. The review is intended to provide more definite conclusions and facilitate evidence-based ovarian drilling for PCOS in Nigeria.

MATERIALS AND METHODS

The Preferred Reporting Items for Systematic Review and Meta-Analysis was used to design and report the results of this systematic review.

Address for correspondence: Prof. Nkeiruka Ameh,
Department of Obstetrics and Gynaecology, Ahmadu Bello University
Teaching Hospital, Zaria, Nigeria.
E-mail: nkeiruameh@yahoo.com

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Search strategy

Electronic search was carried out using Google scholar and PubMed for studies that relate to PCOS management using ovarian drilling and other modalities of treatment in Nigeria from 1991 to 2020. The citation lists of relevant articles and studies were also searched. The key search words were PCOS, Ovarian drilling, Nigeria and limited to 1991–2020.

Selection criteria

We included case reports, retrospective, and prospective studies. Review articles, systematic reviews, and meta-analysis were excluded. Methodological quality of all the studies was evaluated using the standard scoring system developed by Jadad *et al.*^[5] The screening of the studies, selection, data extraction validation, and assessment of methodological quality were carried out by (NA and AGA). There were no disagreements on the decisions.

Outcome measures

The primary outcome was normalization of the menstrual cycle and secondary outcome measure was achievement of pregnancy.

Statistical analysis

The demographic characteristics, presenting complaint, treatment modality, and outcomes of treatment have been analyzed. Due to marked heterogeneity of the studies, pooled data analysis could not be done.

RESULTS

The electronic search identified 28 studies while 2 studies were identified from the reference section of the 28 studies. Twenty-two studies were excluded for lack of relevance. Eight studies were screened, and the full text were searched out. Of the eight studies, two were not found, while six full studies were found and adjudged to be relevant for the systemic review [Figure 1].

The studies consisted of two case reports, two prospective studies, one clinical trial, and one retrospective study. There was a total of 107 patients in the studies, aged 17–49 years [Table 1].

All the patients presented with a complaint of abnormal menstruation and 50%–70% complained of inability to conceive. All patients had used clomiphene citrate as first-line drug to manage their complaints. Ovarian drilling was carried out using the conventional unipolar diathermy and 4 or more drills were made per ovary.

Outcome

Resumption of normal menstruation was achieved in 76.7% of the patients 30% conceived following the procedure. No patient required a repeat or second ovarian drilling. There were no miscarriages [Table 2].

Quality of evidence

The level of quality of evidence in the 6 studies included in the systematic review was poor in 2 studies and medium in 4.

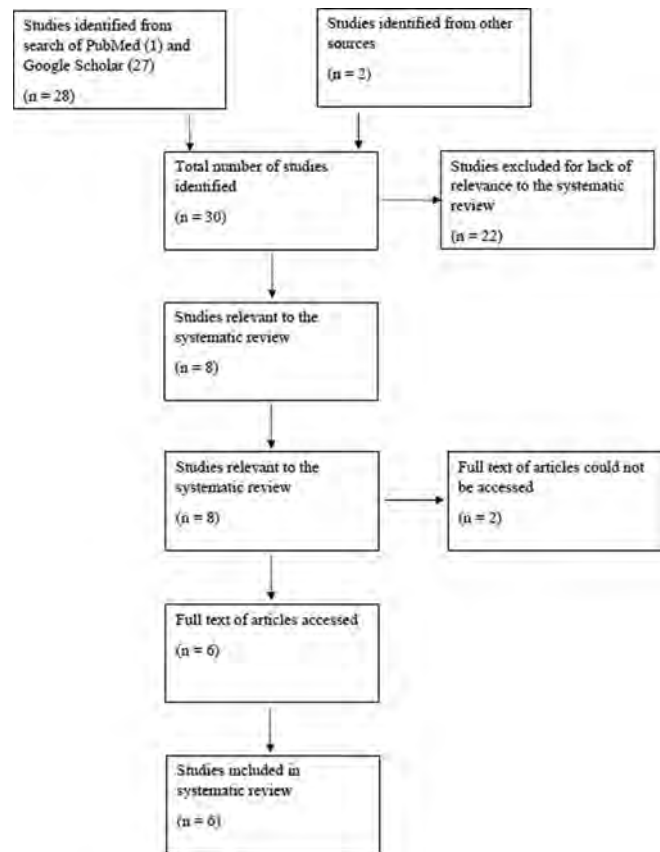


Figure 1: Preferred reporting items for systematic review and meta-analysis flow chart for systematic review on outcome following ovarian drilling in Nigerian women with polycystic ovary syndrome

Table 1: Demographics of 107 patients with polycystic ovary syndrome

Characteristics	Measure
Age (years)	17-49
Menstrual irregularities	107 patients
Normal menstruation	-
Infertility	87 patients
Used clomiphene citrate	87 patients
Nonuse of clomiphene citrate	20 patients
Previous ovarian drilling	-
Previous pregnancy	67 patients

DISCUSSION

PCOS is the most common cause of anovulatory infertility with a prevalence rate of 5%–15% from a European study but reported to be 2.2% in a Nigerian study.^[1,6] The Rotterdam classification for this condition includes menstrual irregularity, physical signs, and symptoms as well as biochemical changes. Two or more of the criteria qualify a patient as having PCOS.^[7] All the patients in the various studies included in the present review met two or more of these criteria.^[8] The age range of the patients was within the reproductive age group. This is expected as the symptoms are seen in the reproductive age.^[9]

Table 2: Summary of 6 studies included in systematic review (n=107 patients)

Study	Study design	Number of patients	Age range (years)	Previous use of CC	Drills per ovary	Time of resumption of menstruation in days	Time of conception after ovarian drilling in months	Percentage that got pregnant	Percentage that had live deliveries	Duration of follow up (years)
Fehintola OA <i>et al.</i>	Prospective	43	21-43	Yes	ND	ND	1-7	59	48.7	Up to 1
Ikechebelu JI <i>et al.</i>	Case report	1	29	Yes	6	14	5	100	100	Up to 1
Omokanye LO <i>et al.</i>	Clinical trial	37	20-44	Yes		ND	6-12	55.6	ND	Up to 1
Omokanye LO <i>et al.</i>	Prospective	23	24-45	Yes	4-15	1-7	3-7	30.4	14.3	Up to 1
Omokanye LO <i>et al.</i>	Case report	1	29	Yes	6-8	2	4	100	ND	<1
Igwegbe AO <i>et al.</i>	Retrospective	2	17-49	Yes	ND	ND	ND	50	100	<1

ND: Not documented, CC: Clomiphene citrate

Menstrual irregularity was a presenting complaint in 5 out of the 6 studies and infertility was a complaint in all the studies as in another report.^[2] Except for one study which assigned patients to various groups including clomiphene citrate, gonadotrophins, weight loss and laparoscopic ovarian treatment, all other studies reported previous treatments on the patients before a resort to laparoscopic ovarian drilling.^[10,11] This may imply that ovarian drilling was reserved for difficult cases of PCOS who fail to respond to other treatments. This may well create a bias in interpretation of the effectiveness of various treatment modalities.^[12] Other treatment modalities are medical and as such may be easier to deploy as a first-line treatment rather than surgical approach.^[11,12]

The number of drills per ovary was initially put at 4/ovary at 4 watts for 4 s using a monopolar needle.^[13] In recent times, the number of drills per ovary is dependent on the size of the ovary and may be up to 9 as in one report.^[10] Some studies reported a reduction in fertility after ovarian drilling^[13,14] probably from ovarian burn injuries but none of the studies in the present review addressed the issue of fertility reduction. Other routes of ovarian drilling are through the vagina and by a mini laparotomy, but these routes are not as popular as laparoscopy.^[15]

Outcome

Time for resumption of menstruation varied from 1 to 14 days in 76.7%–100% of the women and was associated with the disruption of the testosterone-producing ovarian cortex.^[13] This compares with 66% in another report.^[16]

Time for resumption of ovulation after ovarian drilling is varied and is evidenced by conception as seen in 30%–100% of the patients in the present review. This is notably higher than 48% reported from another study.^[15] This is the desired outcome, but the 100% pregnancy outcome may be because of inclusion of case reports in this review with a resultant skewing of the results. This observed difference may be due to differences in study designs. Some patients needed further treatments with clomiphene citrate, but none had a second ovarian drill before conceiving in this review. One study reported a repeat of ovarian drilling in more than 50% of their patients.^[3] Need for repeat medical or surgical treatment may be affected by the presence of other pathologies such as

hyperprolactinemia in the patient.^[16] High antral follicular count which indicates a larger-sized ovary is associated with a need for a second modality of treatment before pregnancy can be achieved.^[16] Thus, apart from managing the ovarian pathology, other conditions need to be treated in order to restore ovulation and achieve pregnancy. There was no report of multiple gestation following ovarian drilling in the present report, this significant as the medical treatment for PCOS is more associated with multiple gestation.^[16] Pregnancy following ovarian drilling is likely to be complicated by a miscarriage.^[16]

Deliveries ranged from 14% to 49% among the reported patients, but two studies did not indicate the delivery rates. This rate is lower than the 42% take-home babies in another report.^[16] The observed difference may be due to the inclusion of case reports in the present systematic review. Duration of follow-up also affects the report of term deliveries. In this review, patients were followed up until delivery except in one study.

Strength of the studies

The studies included in this review were retrospective or case reports in nature, limiting the quality of evidence. Given the low evidence level of the studies, no definite conclusions can be made.

Recommendation

Reports of ovarian drilling in Nigeria indicate a positive outcome. However, given the low level of evidence in the studies, no definite conclusions can be made. Well-designed, multicenter studies are needed to determine the scientific importance of ovarian drilling in the management of PCOS in Nigeria.

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Conflicts of interest

There are no conflicts of interest.

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