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Article

Oocyte retrieval difficulties in women with ovarian endometriomas

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KEY MESSAGE

Oocyte retrieval in women with ovarian endometriomas is more difficult than in women without endometriomas. The magnitude of the increased difficulties is modest and of doubtful clinical relevance.

ABSTRACT

Research question: What are the frequency, characteristics and consequences of technical difficulties encountered by physicians when carrying out oocyte retrieval in women with ovarian endometriomas?

Design: We prospectively recruited women undergoing IVF and compared technical difficulties between women with (n = 56) and without (n = 227) endometriomas.

Results: In exposed women, the cyst had to be transfixed in eight cases (14%, 95% CI 7 to 25%) and accidental contamination of the follicular fluid with the endometrioma content was recorded in nine women (16%, 95% CI 8 to 27%). Moreover, follicular aspiration was more frequently incomplete (OR 3.6, 95% CI 1.4 to 9.6). In contrast, the retrievals were not deemed to be more technically difficult by the physicians and the rate of oocytes retrieved per developed follicle did not differ. No pelvic infections or cyst ruptures were recorded (0%, 95% CI 0 to 5%).

Conclusions: Oocyte retrieval in women with ovarian endometriomas is more problematic but the magnitude of these increased difficulties is modest. © 2018 Reproductive Healthcare Ltd. Published by Elsevier Ltd. All rights reserved.

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Introduction

Classical surgical management of endometriotic ovarian cysts using the laparoscopic stripping technique has been questioned because of the possible damage to the ovarian reserve (Somigliana et al., 2015). The rate of spontaneous ovulation is lower in operated ovaries, serum levels of anti-Müllerian hormone (AMH) decrease after surgery and responsiveness to ovarian hyperstimulation is halved (Somigliana et al., 2015). Even if the data are not fully consistent, i.e., evidence obtained with the use of antral follicle count failed to document a significant damage (Muzii et al., 2014), conservative management has grown in recent years and there is now a general agreement that small endometriomas should not be removed before IVF (Practice Committee of the American Society for Reproductive Medicine, 2012; Dunselman et al., 2014; Vercellini et al., 2016). The conservative approach is also facilitated by the high accuracy of the non-invasive diagnosis of ovarian endometriomas using transvaginal sonography (Exacoustos et al., 2014; Guerriero et al., 2016].

Conservative management, however, is not without potential drawbacks and risks (Somigliana et al., 2015). The presence of endometriomas may interfere with ovarian responsiveness to hyperstimulation (Somigliana et al., 2015) and with oocyte competence (Sanchez et al., 2017). It may also be associated with higher risk of pelvic infections (Somigliana et al., 2015), may affect pregnancy outcome (Fernando et al., 2009), and missing occult malignancies or causing later-in-life cancer development are hazards (Kobayashi et al., 2007). The overall magnitude of these risks is considered modest and does not justify systematic surgery before IVF (Somigliana et al., 2015). On the other hand, it must be recognized that evidence to support this conclusion is generally weak. In this study, we aimed to specifically investigate a neglected but potentially relevant aspect of this argument, i.e. the technical difficulties that physicians may encounter during oocyte retrieval in women with ovarian endometriomas. The effect of these cysts on IVF outcome has been extensively studied in the past (Hamdan et al., 2015) but, to our knowledge, no previous studies specifically designed to evaluate the additional technical difficulties have been published.

Materials and methods

Women undergoing oocyte retrieval between March 2015 and December 2015 at the Infertility Unit of the Fondazione IRCCS Ca' Granda, Ospedale Maggiore Policlinico were prospectively considered for study entry. Eligibility for study entry was assessed at the time of oocyte retrieval. Women were selected as exposed if they had an ultrasound diagnosis of one or more presumed ovarian endometriomas. Previous surgery for endometriosis was not an exclusion criterion for the exposed group. Non-exposed participants were women without a history of surgery for endometriosis and without ultrasound evidence of endometriomas (diagnostic laparoscopy to rule out endometriosis is not part of the infertility diagnostic work-up of our unit). Women without endometriomas who were diagnosed with deep invasive endometriotic nodules were also excluded from this group. In fact, the non-exposed group consisted of women with tubal factor, unexplained infertility and male infertility. Women with an ultrasound diagnosis of diffuse severe adenomyosis, large fibroids (mean diameter >3 cm), multiple fibroids and non-endometriotic ovarian cysts

were excluded from both study groups. Women could be included in the study only once. The study was approved on 17 February 2015 by the local Institutional Review Board (reference number 352) and all women gave a written informed consent to participate.

In our unit, all women scheduled for IVF underwent a general assessment (transvaginal ultrasound and blood tests) the month preceding the attempt. The presence of ovarian cysts was systematically recorded at this baseline evaluation and their presence confirmed during ovarian stimulation. The diagnosis of presumed endometriomas was made before starting the treatment cycle. Specifically, endometrioma was defined as a round-shaped cystic mass with a minimum diameter of 10 mm, with thick walls, regular margins, homogeneous low echogenic fluid content with scattered internal echoes and without papillary projections (Exacoustos et al., 2014). Lesions had to be documented at least twice at least 2 months apart. Doubtful cases were excluded. Women carrying endometriomas larger than 4 cm were counselled about the opportunity of undergoing surgery before IVF; removal was, however, not mandatory and women refusing the intervention could be included in this study.

The regimen of ovarian stimulation and the dose of gonadotrophins were decided on an individual basis according to data from previous IVF cycles, age, day-3 serum FSH, serum AMH and antral follicle count. During stimulation, women were monitored and managed according to a standardized clinical protocol as reported elsewhere (Benaglia et al., 2014). Briefly, they underwent serial transvaginal ultrasounds and, when three or more leading follicles with a mean diameter greater than 18 mm were visualized, HCG was administered subcutaneously. Oocyte retrieval was carried out transvaginally 36 h later. Although the benefits of prophylaxis with antibiotics is still under debate (Bhandari et al., 2015; Kaye et al., 2017), our unit's policy was to systematically administer ceftriaxone 2 g intravenously (clarithromycin 500 mg for women who were allergic) at the time of the retrieval.

The anaesthetic technique included intravenous administration of midazolam 15 mg and fentanyl 0.05 mg associated with a paracervical block with 10 ml of 2% mepivacaine. A single lumen 17-gauge needle was used for oocyte retrieval, and flushing was not carried out. Several follicles could be aspirated in each test tube. In women with endometriomas, all efforts were made to avoid the puncture of the cysts because this might facilitate infection, cyst rupture or follicular fluid contamination (Somigliana et al., 2015). Endometriomas, however, could be transfixed (but not aspirated) to reach follicles behind the cysts if deemed clinically relevant (insufficient number of oocytes retrieved). Transfixion was defined as the voluntary decision to pass through the endometrioma with the needle (without aspirating) to aspirate follicles located behind the cysts. The accidental aspiration of an endometrioma was defined as the presence of endometrioma content in the aspirated follicular fluid. It was suspected by the physician based on the macroscopic contamination of the follicular fluid and confirmed by the biologist who described the presence of chocolate-like fluid at stereo-microscopic evaluation. More specifically, when the physicians suspected the contamination, aspiration was interrupted, and the biologist was requested to check the tube content to confirm or to exclude the diagnosis. The biological diagnosis was based on the observation of a fluid with turbid darkbrown appearance containing many fine black particles (Benaglia et al., 2014; Khamsi et al., 2001). If contamination was confirmed, the needle was flushed with oocyte culture media and then the follicular aspiration was resumed and completed. Eight different physicians, experienced in IVF, carried out all the procedures. The retrieval was

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