National survey of the current management of endometriomas in women undergoing assisted reproductive treatment

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STUDY QUESTION: What is the current management of women with ovarian endometriomas undergoing assisted reproductive treatment (ART) in the UK?

SUMMARY ANSWER: It appears that the majority of gynaecologists in the UK offer surgery (mostly cystectomy) for endometriomas prior to ART, regardless of the presence of symptoms.

WHAT IS KNOWN ALREADY: The ideal management of endometriomas in women undergoing ART remains controversial and presents a dilemma to reproductive specialists.

STUDY DESIGN, SIZE AND DURATION: This was a national cross-sectional survey. A total of 388 gynaecologists completed the questionnaire.

PARTICIPANTS, SETTINGS AND METHODS: All clinicians fully registered with the Royal College of Obstetricians and Gynaecologists were contacted. An 11-item survey was administered electronically using Survey Monkey software. Quantitative data were analysed using descriptive and comparative statistics.

MAIN RESULTS AND THE ROLE OF CHANCE: The majority of responders were consultants (65%), 25% practiced ART and 65% performed laparoscopic surgery. Overall, 95% of responders would offer surgery for endometriomas in women undergoing ART, either on the basis of the size (>3–5 cm) of the endometrioma (52%), the presence of symptoms (16%), the presence of multiple/bilateral endometriomas (2%), regardless of the size and symptoms (19%) or only to women undergoing IVF (6%). The remaining 5% of responders would not offer surgery before ART. Excision was the most common surgical modality (68%), followed by ablation (25%). Laparoscopic surgeons were almost twice as likely to ‘offer surgery to all patients with endometriomas prior to ART’ compared with clinicians performing laparotomy (22 versus 12%, \( \text{P} < 0.001 \)).

LIMITATIONS, REASONS FOR CAUTION: Our overall response rate, with answers to the questionnaire, was low (15%). However, the response rate amongst reproductive specialists was estimated at 60%. It is possible that there might have been an element of bias towards over-representation of responders who are more concerned about ‘normalization’ of the pelvic anatomy. Furthermore, our survey relied on self-reporting of practice and it is possible that being presented with a list of ‘ideal’ options may have resulted in respondent bias.

WIDER IMPLICATIONS OF THE FINDINGS: Despite the available evidence that surgery for endometriomas does not improve the outcome of ART and may damage ovarian reserve, it seems that the majority of gynaecologists in the UK offer ovarian cystectomy to their patients.

STUDY FUNDING/COMPETING INTERESTS: None.

Key words: questionnaire / survey / endometrioma / assisted reproductive treatment
Introduction

Ovarian endometriomas are found in ~20% of women with endometriosis (Redwine, 1999) and are commonly associated with a more severe form of the disease. Treatment options for endometriomas include no treatment, ultrasound-guided aspiration, cystotomy with ablation of the cyst wall or cyst excision (cystectomy). Surgical treatment is usually the preferred choice being the only effective treatment for endometriomas larger than 3 cm in diameter, especially when associated with significant symptoms. However, in women undergoing fertility treatment, particularly assisted reproductive treatment (ART), the optimal management of endometriomas is much debated and represents a dilemma to clinicians. Whilst some reproductive specialists believe that endometriomas (>3 cm) should be treated surgically before ART, others argue that surgery could significantly damage ovarian reserve, which could consequently compromise success of treatment (Nargund et al., 1995; Ho et al., 2002; Somigliana et al., 2003, 2008; Ragni et al., 2005; Esinler et al., 2006; Kahyaoglu et al., 2008; Almog et al., 2010; Benaglia et al., 2010). A systematic review and meta-analysis concluded that surgical treatment of endometriomas before in-vitro fertilisation (IVF) has no effect on ovarian response to stimulation or pregnancy rates compared with no treatment (Tsoumpou et al., 2009). Furthermore, evidence from a recent Cochrane review also suggested that surgical treatment of endometriomas prior to ART does not improve the clinical outcome of treatment (Benschop et al., 2010). On the other hand, advocates of surgery claim that untreated endometriomas could adversely affect ovarian response to ovarian stimulation and could make oocyte retrieval difficult. In addition, inadvertent insertion of the oocyte retrieval needle into an endometrioma could cause severe pelvic infection with subsequent abscess formation. In this context, it is important to note that the European Society of Human Reproduction and Embryology (ESHRE) has published a guideline in 2005 for the management of endometriomas. This guideline recommends laparoscopic ovarian cystectomy in patients with an endometrioma >4 cm in size before IVF. This is advocated in order to confirm the diagnosis histologically, to reduce the risk of infection and to improve access to follicles. It is also stated that it might improve ovarian response.

Another area of considerable debate is the choice of surgical techniques to treat endometriomas in women undergoing ART. Excision of endometriomas seems to be favoured over cyst ablation by many gynaecologists as it is associated with less recurrence of the disease (Hart et al., 2008). However, there are concerns over the more damaging effect of excision on ovarian reserve due to simultaneous excision of normal ovarian tissue with loss of follicles (Hachisuga and Kawarabayashi, 2002; Muzzi et al., 2002; Vercellini et al., 2003).

There have been two previous surveys exploring the management of patients with endometriomas. Neither of these focused on the same question nor targeted the same population as our survey. The first was a postal survey in 2002 aimed at documenting the UK clinical practice for the management of endometriomas between 4 and 8 cm in size. However, it focused exclusively on patients with symptoms of pelvic pain and who wished to retain their fertility (Jones et al., 2002). The second survey was more recent and was conducted by ESHRE, involving 396 members of its special interests group in reproductive surgery and endometriosis. It explored the European-wide compliance rate with the ESHRE guideline of offering laparoscopic ovarian cystectomy prior to IVF in patients with an endometrioma larger than 4 cm in diameter (Gelbaya et al., 2010).

Given the current dilemma and uncertainty relating to the management of endometriomas in women undergoing ART, this survey was designed to establish the current UK gynaecological practice for this condition.

Materials and Methods

Study design and population

This was a cross-sectional survey of all clinicians fully registered with the Royal College of Obstetricians and Gynaecologists (RCOG) in the UK.

Questionnaire design and distribution

The questionnaire was designed to focus on various controversial issues in the management of endometriomas in women undergoing ART, for which no definitive conclusions could be drawn from the existing scientific literature. Specifically, the survey gathered information pertaining to the type of approach used in these patients and the reasoning behind it. ART was defined as intrauterine insemination or IVF.

The questionnaire items were developed by the authors and then revised following peer-review by two experts working in the field of reproductive medicine and surgery. The survey was administered electronically using SurveyMonkey software (www.surveymonkey.com), an internet-based survey tool for questionnaire administration and collection of responses. The first page consisted of an introductory letter, followed by 8–10 items (using skip logic) with domains including personal demographics, type of clinical work carried out, approach to endometriomas in patients undergoing ART and opinion on various statements about possible reasons for and against surgery in these patients.

A list of e-mail addresses was obtained from the RCOG for all registered Members and Fellows of the College. Participants were e-mailed an introductory letter and a link to the electronic survey. Two reminders were later sent, the first at 1 month, followed 7 weeks later by a second reminder. Responses were collected over a period of 11 weeks.

Data entry and analysis

All results were downloaded from http://www.surveymonkey.com/ website onto an Excel sheet and then imported into SPSS (Statistical Package for Social Sciences, SPSS, version 18.0) for descriptive and comparative statistical analysis (using χ² test).

Results

Overall results

Response rate

An initial e-mail was sent to 2750 Members and Fellows of the RCOG. The e-mail was undeliverable to 92 addresses. Clinicians were asked to reply saying ‘not my area’ if the survey was not relevant to them. A total of 571 (21%) clinicians responded to the survey, of whom 388 (15%) completed the survey and 183 indicated that the survey was not relevant to them. Of the 388 responders, 332 (86%) completed the entire survey.
Demographic information and years of work experience of the responders

Of 382 responders answering this question, 252 (66%) were consultants, of whom 60 (28%) practiced reproductive medicine. The majority (n = 291, 76%) of clinicians worked only for the National Health Service (NHS) and 22% (n = 86) worked for both the NHS and the private sector. A total of 43 out of 379 responders (11%) had been working <5 years, 138 (37%) for 5–10 years, 73 (19%) for 10–15 years, 49 (13%) for 15–20 years and 76 (20%) for over 20 years.

Of 337 responders, 83 (25%) performed ART and out of 364 responders, 236 (65%) performed laparoscopic surgery for endometriosis, carrying out on average 5 (range 1–25) procedures per month.

Geographical distribution of responders

Responses were received from all over the UK territory, with the largest group of responders being from England (n = 269/319, 84%), of whom 66 (25%) were from London.

Management of endometriomas in patients undergoing ART

Figure 1 shows the management options offered by the responders for endometriomas in women undergoing ART. Only a single answer was possible for this question. Only 5% of responders (n = 18) stated that they would never offer surgery to this group of patients. The remaining 95% of responders (n = 328/346) would offer surgery for endometriomas before ART, either on the basis of the size of the endometrioma (>3 cm [n = 90, 26%] or >5 cm [n = 89, 26%]) (52%), the presence of symptoms (n = 56, 16%), the presence of multiple/bilateral endometriomas (n = 6, 2%), regardless of the size and symptoms (n = 65, 19%) or only to women undergoing IVF (n = 21, 6%).

The next question explored reasons for not offering surgery. Of the 28 (7%) clinicians who answered this question, 25 (89%) said that they would refer patients to a colleague with specialist skills. A minority (n = 3, 11%) would not offer surgery because of concerns over surgical damage to ovarian reserve.

When asked about the reasons for offering surgery (multiple responses were possible), 186/259 (72%) answered ‘to improve symptoms’, 153 (59%) ‘to improve ovarian response to stimulation’, 134 (52%) ‘to improve access to ovarian follicles during oocyte retrieval’ and 82 (32%) ‘to avoid risk of infection during oocyte retrieval’. Additionally, 32 (12%) gave other reasons for surgery such as to comply with the local IVF unit protocol, to treat other areas of endometriosis and to improve fertility.

As far as the type of procedure was concerned, 208/310 (68%) responders performed cystectomy, 76 (25%) cyst ablation, of whom 79% used diathermy, 11 (4%) used the three-step management [laparoscopic drainage followed by 3 months gonadotrophin-releasing hormone (GnRH) analogue treatment and then laparoscopic cystectomy or ablation] and 7 (3%) used simple drainage. With regard to post-operative management (only one answer was possible), 115/262 (44%) clinicians would wait 6 months for natural conception to occur in women under 37 years of age in the absence of untreated severe endometriosis, while 88 (34%) would offer down-regulation with GnRH analogues before ART, and 59 (22%) would offer IVF immediately to all women. When asked about the duration of GnRH analogue use, the most common answer was 3 months, although there was a range of answers between 1 and 6 months.

Clinician’s opinions on reasons for and against surgical treatment of endometriomas before ART

Tables I and II illustrate the clinician’s opinions on the reasons for and against surgery for endometriomas in these patients. Most clinicians agreed that ‘surgery gives the opportunity to treat other endometriosis’ (86%) and that it ‘relieves symptoms’ (91%). They also agreed with the following statements about advantages of avoiding surgery: ‘avoidance of possible damage to ovarian reserve’ (66%) and ‘avoidance of possible risk of oophorectomy’ (63%).

![Figure 1](https://example.com/figure1.png)

Figure 1 Clinician’s approach to subfertile women with endometrioma undergoing ART.
Comparative analysis

Years of experience

Clinical practices in the management of endometriomas were compared between clinicians with different length of experience (<5, 5–10, 10–15, 15–20 and > 20 years). The treatment approach offered by the various groups is shown in Table III.

None of the clinicians with <5 years experience would consider ‘no surgery’, whilst 8% (n = 5/64) of those with >20 years of experience would consider ‘no surgery’ for patients with endometrioma undergoing ART. The more experienced clinicians (working >20 years) were more likely to perform ablation compared with all other clinicians together (35 versus 22%, respectively, P = 0.055). More experienced gynaecologists (15–20 years) were more likely to carry out the surgery for endometriomas laparoscopically compared with the less experienced (<5 years) (79 versus 51%, respectively, P = 0.014). The reason for undertaking surgery was also influenced by the number of years of experience (Table IV). Surgeons with <5 years experience indicated that their most common reason for performing surgery was to improve ovarian response to stimulation. On the other hand, all clinicians with >5 years experience indicated that their most common reason for performing surgery was to improve patient’s symptoms. Post-operative management was similar in all groups.

Clinicians performing ART versus other clinicians

The approach of clinicians performing ART (n = 79) in women with endometriomas was compared with other clinicians (n = 244). ART clinicians were more likely to be laparoscopic surgeons (80 versus 57%, P < 0.001). The majority of ART clinicians offered surgery ‘to improve ovarian response to ovarian stimulation’ (n = 49/74, 66%) and/or ‘to improve access to ovarian follicles during oocyte retrieval’ (n = 48/74, 65%). On the other hand, the most common reason for offering surgery for clinicians not performing ART was ‘to improve patient’s symptoms’ (n = 122/185, 66%). Both groups performed cystectomy as the most common type of procedure (63 and 69%, respectively). Post-operatively, 51% (n = 38/74) of ART clinicians would offer down-regulation with GnRH analogues, whilst 45% (n = 84/185) of other clinicians would await spontaneous conception. All other responses were similar between the two groups.

Clinicians performing laparoscopy versus those performing laparotomy

A total of 328 responders were included in this analysis (223 performing laparoscopy and 105 performing laparotomy). Laparoscopic surgeons were almost twice as likely to ‘offer surgery to all patients with endometriomas prior to ART’ compared with clinicians

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**Table I** Please give your opinion of the following statements on possible reasons/advantages of surgical treatment of endometriomas before assisted reproductive treatment.

<table>
<thead>
<tr>
<th>Answer options</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Not sure</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Response count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improves ovarian response to stimulation</td>
<td>33 (11%)</td>
<td>149 (48%)</td>
<td>108 (35%)</td>
<td>20 (6%)</td>
<td>0</td>
<td>310</td>
</tr>
<tr>
<td>Improves access to ovarian follicles during oocyte retrieval</td>
<td>35 (12%)</td>
<td>211 (69%)</td>
<td>53 (17%)</td>
<td>6 (2%)</td>
<td>0</td>
<td>305</td>
</tr>
<tr>
<td>Avoids the risk of infection during oocyte retrieval</td>
<td>33 (11%)</td>
<td>120 (39%)</td>
<td>123 (40%)</td>
<td>27 (9%)</td>
<td>3 (1%)</td>
<td>306</td>
</tr>
<tr>
<td>Gives an opportunity to treat other pelvic endometriosis</td>
<td>79 (26%)</td>
<td>184 (60%)</td>
<td>31 (10%)</td>
<td>11 (4%)</td>
<td>1</td>
<td>306</td>
</tr>
<tr>
<td>Relieves symptoms</td>
<td>91 (30%)</td>
<td>188 (61%)</td>
<td>26 (8%)</td>
<td>3 (1%)</td>
<td>1</td>
<td>309</td>
</tr>
<tr>
<td>Increases the possibility of natural conception</td>
<td>41 (14%)</td>
<td>173 (57%)</td>
<td>80 (26%)</td>
<td>9 (3%)</td>
<td>0</td>
<td>303</td>
</tr>
<tr>
<td>Improves patient’s satisfaction/gives patients assurance</td>
<td>29 (9%)</td>
<td>180 (59%)</td>
<td>72 (24%)</td>
<td>21 (7%)</td>
<td>2 (1%)</td>
<td>304</td>
</tr>
</tbody>
</table>

Values in bold indicate most common response.

**Table II** Please give your opinion of the following statements on the possible reasons for not performing surgical treatment of endometriomas before ART.

<table>
<thead>
<tr>
<th>Answer options</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Not sure</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoid possible damage to ovarian reserve</td>
<td>19 (7%)</td>
<td>175 (59%)</td>
<td>48 (16%)</td>
<td>48 (16%)</td>
<td>5 (2%)</td>
<td>295</td>
</tr>
<tr>
<td>Avoid possible risk of oophorectomy</td>
<td>11 (4%)</td>
<td>174 (59%)</td>
<td>28 (10%)</td>
<td>69 (23%)</td>
<td>11 (4%)</td>
<td>293</td>
</tr>
<tr>
<td>Unnecessary exposure to surgical and anaesthetic risks</td>
<td>12 (4%)</td>
<td>134 (46%)</td>
<td>33 (11%)</td>
<td>95 (33%)</td>
<td>16 (6%)</td>
<td>290</td>
</tr>
<tr>
<td>Unnecessary delay of fertility treatment</td>
<td>6 (2%)</td>
<td>89 (30%)</td>
<td>63 (22%)</td>
<td>121 (41%)</td>
<td>14 (5%)</td>
<td>293</td>
</tr>
<tr>
<td>Avoid increasing the patient’s stress levels</td>
<td>2 (1%)</td>
<td>53 (18%)</td>
<td>83 (29%)</td>
<td>136 (47%)</td>
<td>16 (5%)</td>
<td>290</td>
</tr>
<tr>
<td>Avoid adding to the cost of treatment</td>
<td>4 (1%)</td>
<td>58 (20%)</td>
<td>72 (25%)</td>
<td>129 (45%)</td>
<td>24 (9%)</td>
<td>287</td>
</tr>
</tbody>
</table>

Values in bold indicate most common response.
performing a laparotomy (22 versus 12%, \( P < 0.001 \)). They were also more likely to perform surgery ‘for improvement of symptoms’ (71 versus 39%). All other results were similar between the two groups.

UK region of work
No significant differences were found throughout the UK in gynaecologist’s approach to patients with endometriomas undergoing ART.

Discussion
In this study, we have surveyed UK gynaecologists on their approach for the management of endometriomas in women undergoing ART. To the best of our knowledge, this is the first survey for UK practice in this common and challenging condition. As indicated in the Introduction section, there have been two previous surveys exploring clinician’s views on possible treatments for endometriomas. However, these surveys have addressed different patient populations or different groups of gynaecologists.

Survey tool
An electronic questionnaire was chosen as the most comprehensive and user-friendly method of collecting responses. This is considered the simplest, fastest and most cost-effective way of reaching a large number of clinicians.

Table III
Comparative analysis for years of experience versus approach to women with endometrioma undergoing ART.

<table>
<thead>
<tr>
<th>Answer options</th>
<th>Number of years of work experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;5 years</td>
</tr>
<tr>
<td></td>
<td>(n = 40)</td>
</tr>
<tr>
<td>Do not offer surgery at all</td>
<td>0</td>
</tr>
<tr>
<td>Offer surgery to everyone</td>
<td>9 (23%)</td>
</tr>
<tr>
<td>Offer surgery only to patients undergoing IVF</td>
<td>3 (7%)</td>
</tr>
<tr>
<td>Offer ultrasound-guided needle aspiration</td>
<td>0</td>
</tr>
<tr>
<td>Offer surgery only if the endometrioma is symptomatic</td>
<td>3 (7%)</td>
</tr>
<tr>
<td>Offer surgery only if the endometrioma is &gt;3 cm</td>
<td>8 (20%)</td>
</tr>
<tr>
<td>Offer surgery only if the endometrioma is &gt;5 cm</td>
<td>14 (35%)</td>
</tr>
<tr>
<td>Offer surgery only if the endometrioma is &gt;8 cm</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Offer surgery only for multiple/bilateral endometriomas</td>
<td>0</td>
</tr>
<tr>
<td>Offer surgery only if fertility treatment fails</td>
<td>2 (5%)</td>
</tr>
</tbody>
</table>

*Forty-seven responders skipped this question.

Table IV
Comparative analysis for years of experience versus reason for offering surgery

<table>
<thead>
<tr>
<th>Please explain why you offer surgery (*more than one answer possible)</th>
<th>Number of years of work experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;5 years</td>
</tr>
<tr>
<td></td>
<td>(n = 576)*</td>
</tr>
<tr>
<td>To improve ovarian response to stimulation</td>
<td>24</td>
</tr>
<tr>
<td>To improve access to ovarian follicles during oocyte retrieval</td>
<td>15</td>
</tr>
<tr>
<td>To avoid risk of infection during oocyte retrieval</td>
<td>6</td>
</tr>
<tr>
<td>To improve symptoms</td>
<td>14</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>2</td>
</tr>
</tbody>
</table>

Values in bold indicate most common response.
Typical responder and generalizability of results
The ‘typical’ profile of a clinician who responded to this survey was of a consultant, who had worked for 5–10 years exclusively for the NHS in England \( (n = 109, 28\%) \). He/she did not work in the field of reproductive medicine and did not perform ART. He/she did however perform laparoscopic surgery for endometriosis, with an average of five cases per month. He/she offered the patient surgery in the form of cystectomy to improve her symptoms if the endometrioma was larger than \( 3–5 \) cm. This is likely to be a good representation of the ‘average’ gynaecologist in the UK. In fact, half of those who are fully registered in the RCOG are consultants, and due to the recent expansion in consultant numbers, most of them will have worked \(<10\) years. According to the census published by the RCOG in May 2011, the great majority of consultants do practice in England (Royal College of Obstetricians and Gynaecologists, 2011). The census also shows that 100 consultants work in the field of reproductive medicine out of a total of 2186 consultants \( (\sim 5\%) \). In our survey, 60 consultants said that they ‘performed ART’. This suggests that 60% of reproductive specialists in the UK have responded to our survey \( (60 \text{ out of } 100) \). The over-representation of this group of clinicians in our survey was to be expected as they probably found the questionnaire relevant to their practice and were therefore much more likely to complete it. This allows us to answer our research question and gives us the opportunity to compare the practice of clinicians involved in ART with other gynaecologists. Overall, we can therefore conclude that our sample is representative of UK clinicians treating patients with endometriomas, with a good representation of reproductive specialists and laparoscopic surgeons.

Result analysis and discussion
The survey shows that the vast majority \( (95\%) \) of clinicians would offer surgery for endometriomas in the subfertile patient before ART and 71% would do so regardless of symptoms. It is reassuring to see that clinicians follow the guideline published by ESHRE in 2005. However, these figures are high for a procedure with no proven benefit for the outcome of ART. In fact, the ESHRE recommendation was based on the expert opinion of the development group rather than on firm evidence from trials. In the guideline, which was last updates in 2007, the group acknowledged that there is no indication that laparoscopic surgery for endometriomas improves ovarian function or enhances IVF outcomes substantially. It also indicates that there is a risk of ovarian failure with surgery due to the destruction of normal ovarian tissue and that patients should be counselled on an individual basis. Evidence from a randomized controlled study of patients with endometrioma who either underwent intra-cytoplasmic sperm injection directly or after excision of the endometrioma showed a worse response to ovarian stimulation in the treated ovaries. However, no differences in pregnancy rates were detected (Demiroi et al., 2006). Furthermore, there have been two systematic reviews and meta-analyses assessing the impact of surgery for endometriomas on ART outcomes. The first review showed reduced ovarian responsiveness to stimulation in treated ovaries but no differences in overall pregnancy rate (Gupta et al., 2006). The second paper, mentioned in the introduction, concluded that surgical treatment of endometriomas before IVF has no effect on ovarian response to stimulation or pregnancy rates compared with no treatment (Tsoumpou et al., 2009). This is further supported by the Cochrane review (discussed in the Introduction section) which also concludes that surgery on endometriomas before ART does not improve outcomes of ART (Benschop et al., 2010). In addition, in a recent meta-analysis, we have shown a significant reduction in serum AMH concentration following excision of endometriomas (unpublished data).

Laparoscopic surgeons were twice as likely to offer surgery to everyone with endometriomas before ART \( (22 \text{ versus } 12\%) \) and more likely to operate on smaller cyst when compared with other gynaecologists. Intuitively, these results are not surprising, as laparoscopic surgery is less invasive than laparotomy. Clinicians offering laparotomy may consider that the risks associated with a major procedure outweigh the potential benefits.

Interestingly, despite all the concerns mentioned in the literature about the potential damaging effects of surgery on ovarian reserve, only a minority of clinicians \( (11\%) \) indicated that they would not offer surgery for that reason. This is despite the fact that when asked directly in a subsequent question, 66% agreed that avoiding surgery would avoid the risk of damage to ovarian reserve.

Our survey showed that the majority \( (68\%) \) of UK surgeons offered excision rather than ablation of the endometrioma. This indicates that most clinicians are aware that cystectomy is more effective in eradicating the disease with less recurrence rates compared with ablation techniques (Hart et al., 2008). However, most clinicians dealing with fertility patients with endometriomas seem to be little concerned about the potential damaging effect of excisional surgery on ovarian reserve.

Limitations of the survey
Number of clinicians contacted
Our aim was to target all RCOG registered gynaecologists who work in the field of reproductive medicine and minimal access surgery. However, it was not possible to obtain a separate list of these clinicians. We therefore obtained the e-mail addresses of all obstetricians and gynaecologists registered with the RCOG who gave permission for their contact details to be passed on to third parties \( (n = 2750 \text{ out of a total of } 4583 \text{ registered clinicians}) \).

Response rate and possible introduction of bias
Although the overall response rate, with answers to the questionnaire, was low \( (15\%) \), the rate increases considerably when clinicians of different subspecialties/special interests are excluded. Furthermore, the response rate amongst reproductive specialist has been estimated at 60% (see above). Also, the actual number of responders to the survey was considerable \( (388) \).

Our response rate is comparable to other recent online surveys using ‘SurveyMonkey’, which have shown response rates of between 8 and 36% (Barrett et al., 2011; Chipas and McKenna, 2011; Hauck and Nogan, 2011; Jordan and Brown, 2011; Ligas et al., 2011; Mooij et al., 2011; Ong-Tone et al., 2011; Ramondetta et al., 2011; Tomycz et al., 2011). Still, it must be acknowledged that the low response rate may allow for uncertainties, and especially non-response bias. For example, clinicians less familiar with the use of online surveys would have been less likely to complete the questionnaire, despite it being very simple and user-friendly. On the other hand, it
is actually difficult to estimate what the response rate should have been, as we have no precise information on how many clinicians deal with subfertile patients with endometriomas. It is possible that there could be an element of bias towards over-representation of responders who are more concerned about ‘normalization’ of the pelvic anatomy. However, this is possibly a good representation of the general population of UK gynaecologists who are mostly pelvic surgeons with some degree of concern about restoration of pelvic anatomy.

Distribution of survey and structure of questionnaire responses
A further limitation of our survey is that it relied on self-reporting of practice with no independent verification of actual management of these patients. Although clinicians were asked what they currently do and not what they think they should do, it is possible that being presented with a list of ‘ideal’ options may have resulted in respondent bias. Furthermore, most questions were close ended and although in most cases, there was the possibility of adding free text, responders may have preferred to choose one of the pre-given responses.

As the questionnaire was anonymous, there is no way of knowing if clinicians responded multiple times to the questionnaire. However, this is highly unlikely, as there was no incentive or reason for responders to do so. Clinicians replying from the same IP address were not blocked as it was felt that especially in the case of trainees, there may be multiple people using the same computer.

Conclusion
It is clear from this survey that the majority (95%) of gynaecologists would offer surgery (mostly cystectomy) for endometriomas before ART and 26% would offer surgery even for small endometriomas (<5 cm in diameter). This is despite the available evidence that surgery does not improve outcomes of ART and may damage ovarian reserve. We therefore recommend that clinicians should reconsider the value of surgery, especially in patients who have no or mild symptoms.

Authors’ roles

Funding
No external funding was either sought or obtained for this study.

Conflict of interest
None declared.

References


