DEBATE

Investigation of the infertile couple

Should diagnostic laparoscopy be performed after normal hysterosalpingography in treating infertility suspected to be of unknown origin?

Mohammad Fatum1, Neri Laufer and Alex Simon

Department of Obstetrics and Gynecology, Hadassah University hospital, Ein Kerem, Jerusalem, Israel

1To whom correspondence should be addressed at: Department of Obstetrics and Gynecology, Hadassah University Hospital, Ein Kerem, P.O. box 12000, Jerusalem 91120, Israel. E-mail: fatum@md.huji.ac.il

Traditionally, a diagnosis of unexplained infertility is established only when all standard clinical investigations yield normal results. When tubal patency has been established by hysterosalpingography (HSG), laparoscopy has been suggested as a mandatory step to preclude the existence of peritubal adhesions and endometriosis as causes of infertility. In women without a previous history suggestive of tubal disease and who have a normal HSG, it was demonstrated that the probability of clinically relevant tubal disease or endometriosis is very low and that laparoscopy does not seem justified or cost effective. In the minority of these cases, laparoscopy might reveal minimal or mild endometriosis or peritubal adhesions. In these cases, either surgery or medical treatment has not been proven to improve fecundity. With the current success rates of assisted reproductive technologies (ART) and the relatively low contribution of diagnostic laparoscopy to the decision-making process of treating patients with a normal HSG, we suggest that laparoscopy should be omitted in couples suspected of having unexplained infertility. These patients should be treated by 3–6 cycles of combined gonadotrophins and intrauterine insemination, and if unsuccessful switched to ART.

Key words: HSG/infertile couple/infertility treatment/ laparoscopy/ unexplained infertility

Investigation of the infertile couple

A diagnosis of unexplained infertility is usually made only after it has been demonstrated that the female partner ovulates regularly, has patent Fallopian tubes, shows no evidence of peritubal adhesions, fibroids or endometriosis and has a partner with normal sperm production and function (Simon and Laufer, 1993). Only when all standard clinical investigations yield normal results should the diagnosis of unexplained infertility be raised (Speroff et al., 1999). Many believe that the diagnosis should be made only after an infertility period of 2 years (Pepperell and McBain, 1985). Others, (Rousseau et al., 1983) have even suggested that the diagnosis should be reserved until 2 years have elapsed following a normal laparoscopy, based on the observation that during the initial 2 year period of expectant management, a cumulative pregnancy rate of 65% was found. This is supported by the observation that ~60% of couples with unexplained infertility of <3 years duration would become pregnant within 3 years of expectant management (Verkauf, 1983; Collins and Rowe, 1989; Crosignani et al., 1993).

Because the rates of spontaneous pregnancy are still considerably lower than those observed in the normal population (the cumulative pregnancy rate in normal couples within 12 months is 99% as opposed to 60% pregnancy rates after 3 years of expectant management normal infertile couples) (Simon and Laufer, 1993), it is essential to complete the standard diagnostic work-up to avoid overlooking a treatable factor. The generally accepted investigation protocol to establish the diagnosis of unexplained infertility includes semen analysis, a properly timed post-coital test, assessment of ovulation and demonstration of tubal patency (Speroff et al., 1999).

Hysterosalpingography (HSG), laparoscopy or both can be applied to demonstrate tubal patency. HSG is also essential to exclude Müllerian tube malformations and other uterine cavity defects (Simon and Laufer, 1993). However, even when tubal patency has been demonstrated by HSG, laparoscopy has been suggested as a mandatory step to rule out the existence of peritubal adhesions as well as endometriosis as causes of infertility (Pepperell and McBain, 1985; Simon and Laufer, 1993). It has been estimated that using laparoscopy as a standard test of tubal function would reduce the apparent incidence of unexplained infertility from 10 to 3.5% (Drake et al., 1977). In 24 cases of otherwise unexplained infertility, Drake et al. found abnormal findings in 18 (75%). Of these 18 subjects, unsuspected endometriosis was found in 11 (46%) and peritubal adhesions in seven (29%). They concluded that laparoscopy is, therefore, an essential final step in an otherwise negative work-up for infertility (Drake et al., 1977). Since then, laparoscopy has traditionally been suggested to be an integral diagnostic procedure of most infertility investigatory protocols (Simon et al., 1993; Speroff et al., 1999). It was considered a complementary procedure following normal hys-
terosalpingogram precluding endometriosis or peritubal non-obstructing adhesions. Several reports have documented the shortcomings of HSG in establishing the diagnosis of peritubal adhesions (Gutmann, 1992). The sensitivity of HSG in detecting peritubal adhesions has been reported to be 34–75% (Rice et al., 1986). It was found that in 21%, adnexal adhesions and pelvic endometriosis were identified during surgery in spite of a normal HSG (Henig et al., 1991). Therefore, it was suggested by these authors that, ‘the recommended interval of 6 months between normal HSG and diagnostic laparoscopy can be shortened if the HSG is normal and the etiology of the infertility is obscured.’ The superiority of laparoscopy over HSG in assessing extratubular pathology has also been shown in other studies (Rajah et al., 1992; Opsahl et al., 1993; Cundiff et al., 1995; Swart et al., 1995). It has been claimed that endometriosis, regardless of its severity, rarely causes radiographic abnormalities on HSG and therefore can be diagnosed only by laparoscopy (Johnson et al., 1994). On the other hand, discussing cost-effective infertility care, Gleicher suggested that in the case of a normal gynaecoradiological procedure, the probability of clinically relevant tubal disease or endometriosis is so low that laparoscopy does not seem warranted (Gleicher, 2000). He states that relevant diagnostic information can be obtained more cheaply by performing a radiological procedure instead of a laparoscopy. In his view, proper utilization (or better non-utilization) of surgical procedures, usually endoscopic procedures, represents the single most significant factor in providing cost-effective infertility care. In addition, laparoscopy in normal infertile patients will ordinarily show a degree of endometriosis not requiring treatment (Speroff et al., 1999).

Some authors stress the importance of clinical history for the selection of the more appropriate diagnostic tool. By classifying the infertile population to high and low risk infertility groups according to the patient’s past history, pelvic examination and the duration of infertility, some practical conclusions were raised by Portuondo and co-authors (Portuondo et al., 1984). In the high risk group, they recommended early laparoscopy due to the greater abnormal findings encountered at both HSG and laparoscopy. In contrast, low risk infertility patients were found to have decreased abnormal findings, and consequently they recommended that HSG be initially indicated as the less invasive procedure. The authors concluded that clinical data are very valuable in the selection of infertile patients for performing early or late laparoscopy (Portuondo et al., 1984).

Following a normal HSG and normal laparoscopy (if performed) the couple is diagnosed as suffering from ‘unexplained infertility’ and referred to the next line of treatment. The most acceptable and successful approach is that of ovulation induction by gonadotrophins combined with intrauterine insemination (IUI) for 3–6 cycles (Simon and Laufer, 1993; Speroff et al., 1999). When this treatment fails, ART is then offered to the couple.

In the minority of cases who have normal HSG, laparoscopy may reveal minimal or mild endometriosis or peritubal adhesions. In cases of minimal or mild endometriosis, neither surgery nor medical treatments have been proven to be of any benefit (Portuondo et al., 1983; Olive et al., 1985; Hull et al., 1987; Speroff et al., 1999). In cases of mild endometriosis, expectant management is usually rewarded with reasonable pregnancy rates that are comparable with those obtained by either surgical or medical treatment. Others have advocated the laparoscopic resection or ablation of endometriotic lesions to treat the infertility associated with this condition. In a randomized controlled trial, it was found that laparoscopic resection or ablation of minimal and mild endometriosis enhances fecundity in infertile women (Marcoux et al., 1997). They reported that one in eight women with minimal or mild endometriosis should benefit from resection or ablation. Nevertheless, the monthly fecundity rate among women who underwent laparoscopic surgery (6.1%) was much lower than the rate expected in fertile women (20%). Taken together, these observations on minimal and mild endometriosis justify turning to ART, which might offer a higher success rate per cycle than the relatively low pregnancy rates expected after laparoscopic surgeries.

The minority of patients with a normal HSG study, but who have peritubal adhesions by laparoscopy, might benefit from laparoscopic adhesiolysis followed by combined gonadotrophins treatment and IUI to achieve pregnancy as soon as possible after diagnosis. For those who still fail to achieve conception after several cycles of attempt, ART is called as the next line of treatment. However, low risk women for peritubal adhesions will have low abnormal laparoscopic findings as stated above (Portuondo et al., 1984). In these cases, laparoscopy will be of little benefit in determining or changing the management plan. In addition, patients with significant tubal disease will frequently have positive hysterosalphingograms and these women are best advised to proceed to IVF–embryo transfer.

In a comprehensive debate article (Balasch, 2000), the role of laparoscopy as a diagnostic procedure used to investigate the infertile couple was addressed. In this debate Balasch raised the point that as the success of ART improves, clinicians increasingly believe that turning to ART is appropriate even without laparoscopy. He stresses the difficulties in persuading a woman with a normal HSG to undergo an invasive procedure such as laparoscopy. According to Balasch, this attitude towards laparoscopy from both the clinicians and patients, represents a move from a ‘diagnostic work-up’ to a ‘prognosis oriented approach’ in the investigation and treatment of the infertile couple (Balasch, 2000).

In our daily practice, with the improved success rates of ART and the relatively low contribution of diagnostic laparoscopy in the decision as to the next step in treating patients with a normal HSG, we found it logical to offer these patients a treatment by combined gonadotrophins and IUI for 3–6 months and switch to ART if such a treatment fails. This is a reasonable and appropriate suggestion, since even if one finds evidence of peritubal disease by laparoscopy, in most hands IVF will be more successful than treating significant tubal disease through the laparoscope (Speroff et al., 1999).

The impatience of treated couples and considerations of healthcare cost are of utmost importance and influence the type of diagnostic tools or treatments selected by couples.
Omitting laparoscopy from the infertility work-up when HSG is normal and there is no contributing past history can reduce the cost of fertility treatment without compromising success rates. Couples with longstanding infertility will often ask their physician to do something to solve their problem. Additional diagnostic or low productive laparoscopic surgeries may be conceived as loss of precious time and energies.

We suggest therefore, that laparoscopy should be omitted after a normal HSG in couples suspected to have unexplained infertility and advocate the use of ovulation induction to have the cost of fertility treatment without compromising success rates. Couples with longstanding infertility will often ask their physician to do something to solve their problem. Additional diagnostic or low productive laparoscopic surgeries may be conceived as loss of precious time and energies.

We suggest therefore, that laparoscopy should be omitted after a normal HSG in couples suspected to have unexplained infertility and advocate the use of ovulation induction to have the cost of fertility treatment without compromising success rates. Couples with longstanding infertility will often ask their physician to do something to solve their problem. Additional diagnostic or low productive laparoscopic surgeries may be conceived as loss of precious time and energies.

We suggest therefore, that laparoscopy should be omitted after a normal HSG in couples suspected to have unexplained infertility and advocate the use of ovulation induction to have the cost of fertility treatment without compromising success rates. Couples with longstanding infertility will often ask their physician to do something to solve their problem. Additional diagnostic or low productive laparoscopic surgeries may be conceived as loss of precious time and energies.

We suggest therefore, that laparoscopy should be omitted after a normal HSG in couples suspected to have unexplained infertility and advocate the use of ovulation induction to have the cost of fertility treatment without compromising success rates. Couples with longstanding infertility will often ask their physician to do something to solve their problem. Additional diagnostic or low productive laparoscopic surgeries may be conceived as loss of precious time and energies.

We suggest therefore, that laparoscopy should be omitted after a normal HSG in couples suspected to have unexplained infertility and advocate the use of ovulation induction to have the cost of fertility treatment without compromising success rates. Couples with longstanding infertility will often ask their physician to do something to solve their problem. Additional diagnostic or low productive laparoscopic surgeries may be conceived as loss of precious time and energies.

We suggest therefore, that laparoscopy should be omitted after a normal HSG in couples suspected to have unexplained infertility and advocate the use of ovulation induction to have the cost of fertility treatment without compromising success rates. Couples with longstanding infertility will often ask their physician to do something to solve their problem. Additional diagnostic or low productive laparoscopic surgeries may be conceived as loss of precious time and energies.

We suggest therefore, that laparoscopy should be omitted after a normal HSG in couples suspected to have unexplained infertility and advocate the use of ovulation induction to have the cost of fertility treatment without compromising success rates. Couples with longstanding infertility will often ask their physician to do something to solve their problem. Additional diagnostic or low productive laparoscopic surgeries may be conceived as loss of precious time and energies.

References

Within normal HSG, is laparoscopy mandatory?