What effect does hydrosalpinx have on assisted reproduction?

The role of salpingectomy remains controversial

H. Dechaud1 and B. Hedon

Department of Obstetrics and Gynaecology, Reproductive Medicine, CHU Arnaud De Villeneuve, School of Medicine, University Montpellier I, 371 Avenue du Doyen Gaston Giraud, 34295 Montpellier cedex 5, France

1To whom correspondence should be addressed

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We read with great interest the debate article by Lass (1999) in which the author discusses the effect of untreated hydrosalpinges on the outcome of in-vitro fertilization (IVF), together with possible related mechanisms to explain the poor prognosis of IVF treatment. Although these mechanisms remain unclear, the question is no longer the detrimental effect of untreated hydrosalpinges have on IVF outcome, but how do we need to treat hydrosalpinges in order to improve the prognosis of IVF? Several methods, e.g., medical treatment, drainage of the hydrosalpinges or clamping of the proximal part of the tube, have been described in the literature. None of these have clearly demonstrated an improvement in IVF results in terms of embryo implantation and ongoing pregnancy rates. If this is true for these three treatments that have failed to be validated by any prospective or retrospective study, it is not the case for salpingectomy.

Obviously, the place of the salpingectomy remains debatable. There are a number of retrospective studies giving consistent results (Strandell et al., 1994; Blazar et al., 1997; Wainer et al., 1997; Zeyneloglu et al., 1998). Many authors have suggested performing salpingectomy before IVF in order to overcome the negative effects of hydrosalpinges on embryo implantation (Aubriot et al., 1995; Shelton et al., 1996; Ejdrup Bredkaer et al., 1999). However, all these data were retrospective, except one series from our department which was prospective and randomized (Dechaud et al., 1998a). We were intrigued by the report of this study in Dr Lass’s paper (especially in Table I) in which only 14 patients appeared to have been treated. This study included 60 randomized patients: 30 had a bilateral salpingectomy by laparoscopy, and 30 had no salpingectomy. All of them underwent IVF treatment. The results do not reach statistical significance in terms of implantation and pregnancy rates; however, there was a trend towards increased pregnancy as well as increased implantation rates after surgery. At this time, and to the best of our knowledge, this study was the only one in the literature which was prospective and randomized. Unfortunately, all the other retrospective studies in design with major differences in the description of the population and tubal pathology. Consequently, carrying out a meta-analysis is not correct.

According to the results of this pilot study, and in order to reach a power of 0.80 with a significance level of 0.05, 322 patients would have to be included in each group. Because this number is too large to be generated by only one department of gynaecology, the definitive answer to this important clinical question can be reached only if several different centres join together to collect sufficient data for analysis. There is a certain amount of subjectivity in the selection of patients for tubal surgery. Depending on the degree of surgical expertise with different techniques, the same patient might be operated on in one institution but not in another. This bias in the selection of patients makes it difficult to perform statistically significant multicentre studies. In an earlier article in this series, Bleechle (1999) underlined the importance of the definition of a hydrosalpinx (Bleechle, 1999). It is possible that inflammation of the tube, and not its distal obstruction and dilatation, is the detrimental factor for implantation. For this reason, we fully described the tubal pathology in our paper. The patients had shown evidence of severe, irreversible tubal pathology that had been assessed as unsuitable for surgical repair, based on radiological, Fallopianoscopic and laparoscopic criteria. The hysterosalpingographic criteria were extensive inflammatory disease in the proximal part of the tube, with diverticula extending to >2 cm of the isthmus (salpingitis isthmica nodosa); a hydrosalpinx with a poor prognosis because of disturbed mucosal folds; intra-ampullary adhesions or irregular walls; and obstructive bi- or multi-focal pathologies. The laparoscopic criteria were proximal nodes and inflammatory thick-walled hydrosalpinx in both tubes. Hence, all patients had a communicating non-draining hydrosalpinx associated with a salpingitis isthmica nodosa.

This is the most crucial point, and we have to learn to discern between those patients who will profit from surgery and those who will not. In order to differentiate between the two groups of patients, it has been shown that ultrasound might be useful (De Wit et al., 1998). It has been demonstrated that tubal pathology impairs the expression of integrins in the endometrium during the implantation window and, in some cases, this expression could be restored after removing the pathological tubes (Meyer et al., 1997). The tubal pathology increases the number of macrophages in the endometrium, compared with the endometrium of women with endometriosis or fertile women (Dechaud et al., 1998b). Despite the number of studies on the impact of tubal pathology (particularly hydrosalpinx) on embryo implantation, the physiopathology remains unclear. A hydrosalpinx forms after the destruction of...
the fimbria and, consequently, by accumulation of diverse tubal secretions. Given the continuity of the hydrosalpinx with the uterine cavity, these secretions may flow into the uterus and disrupt the process of embryo implantation (Mansour et al., 1991). The resulting dysfunction in endometrial receptivity may be caused by several phenomena. If these hypotheses are correct, bilateral salpingectomy directly treats the cause of endometrial alteration, thus restoring its receptivity. In consequence, embryo implantation would be improved after this procedure.

In cases of major (extensive and inflammatory) tubal pathology, bilateral salpingectomy not only improves IVF results, but it may also, in certain cases, reduce the risks of chronic pelvic pain and acute inflammatory processes in reaction to follicular aspiration or embryo transfer (Peters et al., 1993). Among the other potential advantages of this procedure is the prevention of ectopic ampullary pregnancies (Verhulst et al., 1993). However, the risk of ectopic intramural pregnancies remains after salpingectomy (Pavic et al., 1986).

The question of the ovarian reserve after salpingectomy is currently controversial. Salpingectomy must be performed very close to the tube in order to avoid disrupting the normal blood flow to the ovary. According to Lass (1999), if this condition is not met, clamping the proximal part of the hydrosalpinx, in combination with distal fenestration, is the preferred management. However, the efficacy of this method would be demonstrated, in comparison with salpingectomy (Lass, 1999).

In conclusion, we believe that indiscriminate salpingectomy in women with hydrosalpinges is clearly not the answer. Despite the lack of statistical evidence and the inevitable delay in waiting for the results of other studies to provide definitive proof, salpingectomy should be offered to patients with severe tubal disease without hope of surgical repair to improve their likelihood of becoming pregnant when IVF is required. Then, the next question will be when we have to propose salpingectomy: before the first cycle of IVF or after unsuccessful IVF procedures due to embryo non-implantation?

References
