Utility of percutaneous epididymal sperm aspiration in situations of unexpected obstructive azoospermia

Godwin I.Meniru, Robert G.Forman and Ian L.Craft

London Gynaecology and Fertility Centre, Cozens House, 112a Harley Street, London W1N 1AF, UK

Introduction

Development of the percutaneous epididymal sperm aspiration (PESA) technique has simplified sperm retrieval in men with irremediable obstructive azoospermia, thereby allowing assisted conception treatment in such couples to take place in units that do not have access to expensive microsurgical equipment and suitably trained uroandrologists (Craft et al., 1995; Tsirigotis et al., 1995; Khalifa and Grudzinskas, 1996a). Furthermore, it is now possible for the gynaecologist/fertility specialist to manage both partners of a couple who present with this variety of severe male factor infertility, and the technique of PESA is easy to learn. Between October 1993 and February 1996 we carried out 285 PESA procedures. Ninety-four were performed in association with induced ovulation of the female partner and intracytoplasmic sperm injection (ICSI) of collected oocytes, while the rest (191) were diagnostic procedures. The pregnancy rate was 30% (28 pregnancies in 94 treatment cycles). Our increasing experience with the clinical use of PESA continues to reveal the potentials of this procedure (Meniru et al., 1996). We wish to present a case that illustrates an uncommon, but none the less important benefit of the ability to perform this simple epididymal aspiration procedure within the context of a routine assisted conception treatment service.

Case report

A couple were seen at the Centre with a 20 month history of infertility. The woman was nulligravid while her partner had had two children in his first marriage. He had had a successful reversal of a 10 year old vasectomy operation 19 months prior to presentation, but subsequent semen analyses showed a low sperm density (4–17 ×10^6 sperm/ml), motility (20–39%), progression (0–1/4) and increased abnormal morphology (60–90%). Clumping of the sperm was also noted in the liquefied ejaculate. Repeat semen analysis at the Centre revealed a viscous ejaculate of 2 ml with a sperm density of 15 ×10^6/ml, motility of 66%, progression of 2–3/4 and 90% abnormal forms. Following discussion of available treatment options the couple chose to have in-vitro fertilization (IVF) with ICSI. Ovulation induction with follicle stimulating hormone using the long protocol (leuprorelin acetate; Lederle Laboratories Ltd, Gosport, UK) was carried out and oocyte retrieval scheduled for 36 h after the injection of human chorionic gonadotrophin. However, on the day of this procedure, 8 weeks after the last semen analysis, no spermatozoa were found in the ejaculate produced by the man on two occasions that morning. Options discussed with the couple at this time were cancellation of the treatment cycle, proceeding with oocyte retrieval and conventional IVF with donor sperm, and PESA with ICSI of retrieved oocytes. They chose the last option and PESA was carried out using techniques fully described previously (Shrivastav et al., 1994; Tsirigotis and Craft, 1995; Craft et al., 1995; Meniru et al., 1996). Spermatozoa were seen in the epididymal aspirate but motility was <5% with all exhibiting non-progressive movement. ICSI of 15 metaphase II oocytes yielded 11 eggs with two pronuclei and subsequently nine cleaving embryos. Transfer of three embryos was carried out 48 h after oocyte retrieval and a positive pregnancy test result obtained after 12 days. Ultrasound scanning 3 weeks later revealed a twin pregnancy which was progressing uneventfully into 34 weeks at the time of this report.

Discussion

Unpredicted obstructive azoospermia on the day of oocyte retrieval is unarguably uncommon. However, this will not be of any consolation to a couple faced with an unexpected situation in which they have to make a rapid decision either to cancel the treatment cycle or to continue the treatment but with the use of donor sperm, without proper prior psychological preparation and support. Furthermore, the premium placed on each cycle of IVF treatment by patients and staff means that all attempts must be made to maximize the pregnancy potential of each cycle. Thus because PESA expertise was available in our unit, a couple are expecting soon to become genetic parents.

This case also supports the philosophy behind our development of the PESA technique. Microepididymal sperm aspiration (MESA) (Temple-Smith et al., 1985) is an effective surgical sperm retrieval method but the requirement for microsurgical
equipment and suitably trained uroandrologists (Silber et al., 1994; Silber, 1996) has severely limited its world-wide availability to relatively few assisted conception units. Yet evidence abounds that a significant number of previously infertile couples with irretrievable obstructive azoospermia can now become genetic parents through ICSI with surgically retrieved sperm. MESA also has a greater potential for postoperative morbidity (Shrivastav et al., 1994; Craft et al., 1995; Tsirigotis and Craft, 1995).

It is therefore logical that a ‘low-tech’, minimally invasive alternative to MESA (Khalifa and Grudzinskas, 1996a,b) will place surgical sperm retrieval within the reach of every unit. PESA fulfils the relevant criteria and we have demonstrated that it is equally as efficacious as MESA and has comparable pregnancy rates (Silber et al., 1994; Khalifa and Grudzinskas, 1996a,b; Tsirigotis and Craft, 1996). An increasing number of gynaecologist/fertility specialists are now discovering that there is no reason why this simplified surgical sperm retrieval method cannot be applied successfully in any assisted conception treatment service (Batzofin et al., 1996). We have also noted reports by multidisciplinary teams, that include urologists, who adopt similar strategies for diagnostic and ICSI treatment cycle using epididymal and testicular sperm retrieval, and testicular biopsy (Landau, 1996; Segal et al., 1996; Sherins et al., 1996). The ability to perform any of these retrieval operations, however, does not absolve the practitioner from ensuring an adequate prior investigation of the infertile male and from determination of the feasibility of a re-anastomosis procedure such as vaso-vasostomy or vasoepididymostomy, if indicated. It is only in those with irretrievable azoospermia that surgical sperm retrieval is indicated.

We have always advocated the use of simplified techniques in assisted conception treatments to reduce confusion and stress for patients and staff, decrease the cost of treatment and make the treatment modalities more easily available to units that operate on a small budget. The latter considerations are very relevant to the current situation in most countries where governments refuse to fund assisted conception treatment. We intend to report our cumulative experience of treatment cycle surgical sperm retrieval, based on >100 ICSI–PESA cycles, to document the continuing success with this technique.

Acknowledgement
This report was supported by Life Force Research Ltd, London, UK.

References
Batzofin, J., Tran, C., Tan, T. et al. (1996) Percutaneous epididymal sperm aspiration with ICSI — less is more. Presented at the 52nd annual meeting of the American Society for Reproductive Medicine, Boston, MA, USA. Abstracts, S111.
Segal, S., Zohav, E., Katz, N. et al. (1996) Pregnancies with cryopreserved and incubated testicular spermatozoa obtained by TESA/TESE and ICSI. Presented at the 52nd annual meeting of the American Society for Reproductive Medicine, Boston, MA, USA. Abstracts, S228.
Sherins, R.J., Belker, A.M., Coulam, C.B. et al. (1996) Percutaneous nonsurgical sperm aspiration (NSA) from the testis: a highly effective diagnostic and treatment method to achieve pregnancy in azoospermic men. Presented at the 52nd annual meeting of the American Society for Reproductive Medicine, Boston, MA, USA. Abstracts, S113.

Received on October 28, 1996; accepted on February 13, 1997