
Transrectal electroejaculation combined with in-vitro fertilization: effective treatment of anejaculatory infertility due to spinal cord injury

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Infertility due to spinal cord injury (SCI) in young men is a frequent complication of their injury. When the simpler methods of management of the erectile and ejaculatory dysfunction that invariably follow the more severe types of SCI are not effective, then semen production by transrectal electroejaculation (TREE) combined with in-vitro fertilization (IVF) and embryo transfer is effective. A retrospective analysis is presented of data on the treatment and outcome of 35 couples who wished to have a family but in whom the male partner had suffered SCI. These 35 couples had 71 attempts at IVF with spermatozoa obtained following TREE. Normal fertilization and cleavage of the embryos occurred in 48.2% of the oocytes. Fresh embryos were transferred in 54 cycles and frozen–thawed embryos in 14 cycles. In all, 18 clinical pregnancies were achieved in 54 fresh and 14 frozen embryo transfer cycles, with a live birth rate of 16.5% (14/85) per treatment cycle started, 20.6% (14/68) per transfer cycle and 40.0% (14/35) per couple who started treatment, in a mean of 1.9 transfer cycles. We conclude that TREE combined with IVF and embryo transfer is an effective treatment for the infertility problems associated with SCI.

Key words: anejaculation/electroejaculation/in-vitro fertilization/spinal cord injury

Introduction

More than 10 000 cases of spinal cord injury (SCI) occur in the USA (Bennett et al., 1988) and an estimated 2000 cases in the UK annually. The majority of these are among young men aged between 18 and 35 years. Only 5% of them are likely to be able to achieve pregnancies with their partners without assistance (Mallidis et al., 1994). The loss of fertility that occurs after SCI in between 85 and 97% of young men is for two main reasons: sperm quality declines rapidly after the injury (Bennett et al., 1987, 1988; Ayres et al., 1988; Rainsbury, 1992) and impotence and ejaculatory dysfunction invariably follow the injury (Mallidis et al., 1994).

Various methods have been devised to obtain semen from young SCI men, including the use of penile vibrators (Brindley, 1984; Dahlberg et al., 1995) and, more recently, the technique of transrectal electroejaculation (TREE; Thomas et al., 1975; Bennett et al., 1987; Rainsbury, 1992; Toledo et al., 1992).

Penile vibrators have been shown to be effective in men with cervical and thoracic lesions (Dahlberg et al., 1995), but in whom reflex hip flexion occurs after scratching the sole of the foot, indicating a degree of reflex function in the lumbar and sacral segments. Those who show no hip flexion reflex will invariably not respond to the vibrator and will require TREE (Brindley, 1981, 1984; Siosteen et al., 1990).

The development of assisted reproduction techniques over the past 20 years has created much improved methods for the preparation of spermatozoa for men with very poor semen quality. Cohen et al. (1985) first showed that men with severe degrees of male factor infertility could be helped to achieve pregnancies with their partners using in-vitro fertilization (IVF) of oocytes with prepared spermatozoa, while the most recently developed method of intracytoplasmic sperm injection (ICSI) has made it possible to achieve pregnancies with ejaculates containing minimal numbers of spermatozoa (Denil et al., 1996; Hultling et al., 1997).

Standard insemination of the partners of SCI men with the neat ejaculate obtained by either vibrator or TREE has been shown to be unsuccessful because of the poor quality of the semen samples obtained (Rainsbury, 1992). The more recently developed technique of intrauterine insemination (IUI) of washed and prepared semen is more successful, but the results are still disappointing, with published pregnancy rates of between 5 and 9% per insemination cycle (Rainsbury, 1992; Toledo et al., 1992; Ohl et al., 1995). Since 1989, this clinic, like others (Hultling et al., 1995; Ohl et al., 1995), has successfully treated the majority of couples referred for fertility treatment, of whom the male partner has sustained a SCI, by TREE combined with IVF. Data on the treatment and outcome of 35 couples indicate that acceptable pregnancy rates can be achieved in these cases where the male would otherwise have no chance of fathering his own genetic children.

Materials and methods

Subjects

During the period December 1989–June 1995, 56 couples of whom the male partner had sustained a SCI were referred for fertility treatment to Bourn Hall, Bourn, UK. All couples received in-depth counselling and a pre-treatment semen assessment was performed. The female partners underwent appropriate fertility investigations. Of the 56 couples, seven SCI men were able to produce semen samples of sufficient quality (>4×10⁶ motile spermatozoa/ml ejaculate) with a penile vibrator; they were offered IUI as a first-line treatment if the female partner had patent Fallopian tubes. Three of the 56 couples were able to produce semen samples on their own with the use of a vibrator; they carried out self-insemination. In all, 11 couples attended for assessment, mostly pending hearing of their legal cases, or they
chose not to pursue treatment after receiving advice and counselling. Of the 56 originally referred couples, 35 finally underwent treatment by IVF and embryo transfer using spermatozoa obtained by TREE. During the time of this study, ICSI was not available as a treatment option in this clinic. In all 35 cases the Seager rectal probe was used for the TREE procedure (Bennett et al., 1987; Halstead et al., 1987). The mean age of the female partner was 29.4 ± 5.1 years (range 21–43) and the mean age of the male partner was 32.2 ± 6.1 years (range 24–47). Their mean duration of wishing to start a family was 6.1 ± 5.2 years (range 3–20). Three of the 35 female partners suffered from tubal factor infertility and two from endometriosis; no fertility problems were diagnosed in the remaining women. The level of the injury to the spinal cord in the men ranged between cervical vertebra 5 and lumbar vertebra 1. The mean time interval between the SCI and first IVF treatment was 8.5 ± 6.6 years (range 1–27).

**Treatment**

The ovarian stimulation protocol used for the 71 IFV and embryo transfer cycles employed the gonadotrophin-releasing hormone (GnRH) agonist buserelin (Suprefact; Hoechst, Hounslow, UK) combined with human menopausal gonadotrophin (Pergonal; Serono Laboratories Ltd, Welwyn Garden City, UK), follicle stimulating hormone (FSH) or highly purified FSH (Metrodin or Metrodin HP; Serono Laboratories Ltd). The regimes for ovarian stimulation and cycle monitoring have been described previously (Edwards and Steptoe, 1983; Macnamee and Brinsden, 1992; Marcus et al., 1993). All oocyte retrieval procedures were carried out using the ultrasound-directed transvaginal method (Wikland et al., 1983; Brinsden, 1992). Before the woman underwent oocyte recovery, the man was taken to the operating theatre and semen collected using the TREE method described by Seager et al. (Halstead et al., 1987) and adapted at this clinic (Rainsbury, 1992). Prophylactic antibiotics were administered to the SCI man only if there was evidence of infection in the semen or urine. TREE was conducted under general anaesthesia only if the men had any sensation in the genital region or had previously experienced severe abdominal pains or leg spasms during previous TREE procedures. To prevent serious elevation of blood pressure, the major complication of autonomic dysreflexia, between 20 and 40 mg sublingual nifedipine was given prophylactically, with the dose depending on the level of the spinal injury.

**Sperm preparation**

Antegrade and retrograde (catheter) specimens were removed to the laboratory for preparation. Any antegrade ejaculate was prepared using a two-step Percoll gradient, and the resulting pellet was resuspended in Earle’s culture medium and the sperm concentration adjusted to 100 000/ml (Avery and Elder, 1992). Any retrograde ejaculate retrieved from the bladder was subjected to centrifugation at 200 g for 5 min. The resulting pellet was resuspended in Earle’s culture medium and the centrifugation repeated. The final pellet was then overlain with 1 ml of medium and left at room temperature for 1 h to allow any progressively motile spermatozoa to swim into the upper layer. This layer was then removed, and the concentration of motile spermatozoa assessed and adjusted to a concentration of 100 000/ml. In cases where the spermatozoa showed poor progressive motility, the pellet was simply resuspended and left to stand to allow non-motile spermatozoa to sediment. Depending on the actual motile sperm count resulting from these techniques, preparations from the antegrade and retrograde ejaculates were combined or used separately, to give the optimum sample for insemination.

**In-vitro fertilization**

In-vitro culture and insemination were carried out according to our normal laboratory procedure (Purdy, 1982; Elder and Avery, 1992). Oocytes were inseminated 3–5 h post-collection, by transferring them to 200 µl droplets of the sperm suspension containing 20 000 spermatozoa, and cultured under paraffin oil. Where only low numbers of spermatozoa were available, more than one oocyte was placed in each of the droplets. Fertilization of the oocyte was judged to have occurred when two clear pronuclei were visible ~18 h post-insemination. If more than five oocytes were seen to have fertilized, five were maintained in culture while the remainder were frozen at the pronuclear stage in propanediol and sucrose (Testart et al., 1986). A maximum of three embryos were transferred to the uterus using a Wallace embryo transfer catheter (Wallace, Colchester, UK). Any remaining grade 1 or 2 cleavage stage embryos were then cryopreserved (Testart et al., 1986; Elder and Avery, 1992). Luteal phase support was provided with i.m. progesterone (Gestone; Ferring Pharmaceuticals Ltd, Feltham, UK).

**Transfer of cryopreserved embryos**

Cryopreserved–thawed embryos were replaced in later treatment cycles if pregnancy did not occur, or if a couple had one child from the first cycle and they wished to have another. These embryos were replaced in either ‘natural’ monitored cycles or hormone-controlled cycles, as described previously by Sathanandan et al. (1992).

**Pregnancy monitoring**

Plasma samples were taken from the woman 15 days after oocyte collection for measurement of human chorionic gonadotrophin (HCG) and progesterone concentrations. If serum pregnancy concentrations of HCG (>10 IU/l) were recorded, then the HCG and progesterone concentrations were monitored at 5 day intervals. All clinical pregnancies were confirmed by ultrasound scanning at or near day 35 after embryo transfer. A clinical pregnancy was defined as the presence of a fetus within a gestation sac, with evidence of fetal cardiac activity. Transient rises in HCG (‘biochemical pregnancies’) without evidence of a gestation sac, ‘blighted ova’ or ectopic pregnancies were recorded but are not included in this analysis of data.

**Results**

A total of 35 patients underwent 71 cycles of IVF following TREE. Four of the oocyte recovery procedures were cancelled because the semen sample obtained by TREE on that day was not adequate for IVF. In three cases no motile spermatozoa were found in the ejaculate, and in another case only an occasional motile spermatozoon was found in the sperm pellet obtained after centrifugation.

The semen characteristics of those couples who achieved fertilization and those who failed to do so are shown in Table I. The characteristics of the cycles in which pregnancy did or did not occur are shown in Table II. The mean fertilization rate (48.2%) was significantly lower than the fertilization rate achieved by all routine IVF patients (67%) during the same time period in our laboratory. However, there was no significant difference in the rate of embryo cleavage (89 versus 91%) or the implantation rate per embryo (10.9 versus 11.6%). There was no significant correlation between total motile sperm count and either duration of injury (r = 0.2) or the fertilization rate (r = –0.14).

The mean number of oocytes collected per treatment cycle
Transrectal electroejaculation and IVF

Table I. Characteristics of semen obtained by transrectal electroejaculation in which fertilization occurred or did not occur

<table>
<thead>
<tr>
<th></th>
<th>With fertilization</th>
<th>Fertilization failure of all oocytes</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of cycles</td>
<td>56</td>
<td>9</td>
</tr>
<tr>
<td>Initial total sperm count (mean $\times 10^6$) (range)</td>
<td>83 (0.1–310)</td>
<td>111 (0.1–437)</td>
</tr>
<tr>
<td>Initial mean percentage motility (range)</td>
<td>15 (0.1–68)</td>
<td>11 (0.3–26)</td>
</tr>
<tr>
<td>Initial total motile sperm count (mean $\times 10^6$) (range)</td>
<td>5.3 (0.002–29.9)</td>
<td>5.9 (0.01–18.4)</td>
</tr>
<tr>
<td>Post sperm preparation sperm count (mean $\times 10^6$) (range)</td>
<td>3.8 (0.04–30)</td>
<td>3.7 (0.04–3.4)</td>
</tr>
<tr>
<td>Post sperm preparation motility (mean %) (range)</td>
<td>65 (2–99)</td>
<td>65 (47–99)</td>
</tr>
</tbody>
</table>

Table II. Characteristics of semen obtained by transrectal electroejaculation in cycles resulting in pregnancy or no pregnancy

<table>
<thead>
<tr>
<th></th>
<th>Pregnancy cycles</th>
<th>Non-pregnancy cycles</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of cycles</td>
<td>16</td>
<td>55</td>
</tr>
<tr>
<td>Initial total sperm count (mean $\times 10^6$) (range)</td>
<td>84 (8–310)</td>
<td>86 (0.7–437)</td>
</tr>
<tr>
<td>Initial mean percentage motility (range)</td>
<td>13 (0.9–45)</td>
<td>15 (0.1–68)</td>
</tr>
<tr>
<td>Initial total motile sperm count (mean $\times 10^6$) (range)</td>
<td>4.9 (0.6–11.8)</td>
<td>5.4 (0.002–29.9)</td>
</tr>
<tr>
<td>Post sperm preparation total sperm count (mean $\times 10^6$) (range)</td>
<td>3.5 (0.15–12.8)</td>
<td>3.7 (0.04–30)</td>
</tr>
<tr>
<td>Post sperm preparation motility (mean %) (range)</td>
<td>65 (16–97)</td>
<td>65 (2–99)</td>
</tr>
<tr>
<td>Fertilization rate of oocytes (mean %) (range)</td>
<td>62 (0–100)</td>
<td>44 (0–100)</td>
</tr>
</tbody>
</table>

Table III. Progress of in-vitro fertilization (IVF) treatment cycles

<table>
<thead>
<tr>
<th>Parameter</th>
<th>No. of couples treated</th>
<th>No. of IVF treatment cycles started (mean no./couple)</th>
<th>No. of cycles to oocyte recovery (%)</th>
<th>Mean ± SEM no. of oocytes retrieved/cycle (range)</th>
<th>No. of couples with complete failure of fertilization (%)</th>
<th>No. of cycles with all embryos cryopreserved</th>
<th>No. of embryo transfers cancelled</th>
<th>No. of fresh embryo transfer cycles</th>
<th>No. of fresh embryos transferred/cycle (mean ± SEM)</th>
<th>No. of cycles with spare embryos cryopreserved (%)</th>
<th>No. of spare embryos cryopreserved (mean ± SEM)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>35</td>
<td>71 (2.0)</td>
<td>67 (94.4)</td>
<td>9.8 ± 2.1 (1–25)</td>
<td>9 (13.4)</td>
<td>2</td>
<td>2</td>
<td>54</td>
<td>2.40 ± 0.12</td>
<td>222/54 (40.7)</td>
<td>2.70 ± 0.16</td>
</tr>
</tbody>
</table>

Note: All embryos are routinely cryopreserved if there is perceived to be a high chance of developing ovarian hyperstimulation syndrome — see text.

Table IV. Outcome of cryopreserved embryo transfer cycles

<table>
<thead>
<tr>
<th>Parameter</th>
<th>No. of couples with cryopreserved embryos</th>
<th>No. of thawed embryo transfer cycles</th>
<th>No. of embryos transferred (mean ± SEM)</th>
<th>No. of clinical pregnancies per transfer (%)</th>
<th>No. of live births per transfer (%)</th>
<th>No. of live births per couple with frozen embryos (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of couples with cryopreserved embryos</td>
<td>11</td>
<td>14</td>
<td>2.3 ± 0.3</td>
<td>4 (28.6)</td>
<td>4 (28.6)</td>
<td>4 (36.4)</td>
</tr>
</tbody>
</table>

Note: aTwo patients in the study group each conceived and delivered twice, once with fresh embryos and later following frozen–thawed embryo transfer.

Table V. Summary of the outcome of all treatment cycles

<table>
<thead>
<tr>
<th>Parameter</th>
<th>No. of couples treated</th>
<th>Total no. of treatment cycles starteda</th>
<th>Total no. of transfer cyclesb</th>
<th>Total no. of clinical pregnanciesc</th>
<th>Total no. of delivered pregnancies</th>
<th>Clinical pregnancy rate per treatment cycle started (%)</th>
<th>Clinical pregnancy rate per transfer cycle (%)</th>
<th>Clinical pregnancy rate per couple (%)d</th>
<th>Delivered pregnancy per treatment cycle</th>
<th>Delivered pregnancy per transfer cycle</th>
<th>Delivered pregnancy per coupleed</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of couples treated</td>
<td>35</td>
<td>85</td>
<td>68</td>
<td>18</td>
<td>14</td>
<td>18/85 (21.2)</td>
<td>18/68 (26.5)</td>
<td>18/35 (51.4)</td>
<td>14/85 (16.5)</td>
<td>14/88 (20.6)</td>
<td>14/35 (40.0)</td>
</tr>
</tbody>
</table>

Note: aFresh embryo transfer = 71; frozen embryo transfer = 14.
bFresh embryo transfer = 54; frozen embryo transfer = 14.
cFresh embryo transfer = 14; frozen embryo transfer = 4.
dIn a mean of 2.5 started treatment cycles and 1.9 cycles achieving embryo transfer.

was 9.8 ± 2.1 (range 1–25) (Table III). Fertilization was achieved in 56 cycles (86.5%). In two cycles all the embryos were frozen electively because of an increased risk of ovarian hyperstimulation syndrome (Amso et al., 1990; Brinsden et al., 1995), and in two further cycles embryo transfer was abandoned as the embryo culture dishes became infected because of subclinical urinary tract infections in the SCI men. A mean of 2.40 ± 0.12 embryos were transferred to the uterus. In the later cryopreserved–thawed embryo replacement cycles a mean of 2.3 ± 0.3 embryos were transferred (Table IV).

A total of 54 fresh and 14 cryopreserved–thawed embryo transfers were carried out during this period (Table V). In all, 18 clinical pregnancies were achieved, 14 from fresh embryos and four from frozen–thawed embryos. Three pregnancies was 9.8 ± 2.1 (range 1–25) (Table III). Fertilization was achieved in 56 cycles (86.5%). In two cycles all the embryos were frozen electively because of an increased risk of ovarian hyperstimulation syndrome (Amso et al., 1990; Brinsden et al., 1995), and in two further cycles embryo transfer was abandoned as the embryo culture dishes became infected because of subclinical urinary tract infections in the SCI men. A mean of 2.40 ± 0.12 embryos were transferred to the uterus. In the later cryopreserved–thawed embryo replacement cycles a mean of 2.3 ± 0.3 embryos were transferred (Table IV).

A total of 54 fresh and 14 cryopreserved–thawed embryo transfers were carried out during this period (Table V). In all, 18 clinical pregnancies were achieved, 14 from fresh embryos and four from frozen–thawed embryos. Three pregnancies
miscarried in the first trimester, one in the second trimester and 14 have delivered one or more live babies. Two patients in this series conceived twice, first in the fresh transfer cycle and later in a frozen–thawed embryo transfer cycle. Of the pregnancies, 13 were singleton on early ultrasound scanning and five were diagnosed as twin pregnancies, two of which subsequently delivered single babies. There were no triplet or higher order pregnancies.

The overall clinical pregnancy rate was 25.4% (18/71) per stimulated IVF treatment cycle started: 25.9% (14/54) per fresh embryo transfer and 28.6% (4/14) per frozen–thawed embryo transfer cycle. The clinical pregnancy rate per couple who started treatment was 51.4%. The overall live birth rate was 16.5% (14/85) per fresh and frozen treatment cycle started combined, 20.6% (14/68) per fresh and frozen–thawed embryo transfer and 40.0% (14/35) per couple, in a mean of 2.5 started and 1.9 transfer cycles (Table V).

Discussion

It has been recognized for many years that the fertility prospects of young men who suffer SCI are invariably severely compromised (Munro et al., 1948; Brindley, 1984; Dahlgberg et al., 1995). There are two causative factors: loss of ejaculatory function, which occurs in between 85 and 97% of men after SCI (Ohl et al., 1989), and reduced sperm quality (Brindley, 1984; Ohl et al., 1989; Siioen et al., 1990; Mallidis et al., 1994).

Penile erection and ejaculation are necessary to achieve conception by normal intercourse. Erection depends on normal functioning of the pelvic parasympathetic and adrenergic nerve pathways. Ejaculation depends on intact pathways for afferent stimuli via the pudendal nerve, with sympathetic activity along the preganglionic fibres between T11 and L2, via the hypogastric plexus, to the postganglionic fibres in the prostate, seminal vesicles and vas deferens. A number of methods of managing erectile and ejaculatory dysfunction have been devised, including the use of penile intracavernous injections of papaverine (Virag, 1982), semen capsules (Brindley et al., 1986a), hypogastric plexus nerve stimulation (Brindley et al., 1986b), penile vibrators (Brindley, 1981, 1984) and, most recently, TREE techniques (Thomas et al., 1975; Brindley, 1981; Bennett et al., 1987).

It is rare not to be able to produce a semen sample from SCI men using the TREE technique (Ohl et al., 1989). The main reason for failure is having to abandon the procedure because of autonomic dysreflexia, the most worrying complication of the treatment. A few men will produce seminal fluid but are azoospermic. We have not yet failed to obtain semen from any SCI man by TREE nor, using prophylactic nifedipine, has it been necessary to abandon a sperm retrieval procedure because of severely raised blood pressure. TREE is now the principal treatment method used in this unit because, as a tertiary referral centre, the simpler methods have usually been tried already without success. The first pregnancy achieved by combining TREE and insemination was in 1975 (Thomas et al., 1975), but the patient aborted spontaneously. The first live birth following treatment combining TREE and IUI was reported by Bennett et al. (1987). There are few reports of other such successes, and the results are generally disappointing, with Toledo et al. (1992) reporting only one live birth after 18 insemination cycles. Nehra et al. (1996) reported 17 successful pregnancies among 27 couples, with five achieved by self-insemination, five by IUI and seven by assisted reproductive techniques. Chung et al. (1996) reported a 10% pregnancy rate with IUI in 10 couples having 50 cycles of treatment. Our own early experiences confirm the relatively poor success rates, with only one pregnancy achieved in 14 insemination cycles (Rainsbury, 1992). Perkash et al. (1985) showed that the principal reason for this failure is the poor quality of the majority of the semen samples obtained. For this reason, and because of the availability of a complete infertility team experienced in all aspects of assisted reproduction and TREE, we, in common with others who have had experience of managing large numbers of infertile SCI patients (Ohl et al., 1989; Hultling et al., 1997), have concentrated on managing these couples with TREE combined with IVF and, most recently, with ICSI (Denil et al., 1996; Hultling et al., 1997).

There are a number of reasons postulated for the loss of sperm quality following SCI, and it is likely that it is a combination of the following factors: recurrent genitourinary infection; increased scrotal temperature; absent or infrequent ejaculation; and hormonal and neurological disorders that arise as a result of the accident (Shaban et al., 1988; Witt et al., 1992).

Many SCI men have not ejaculated since their injury, which may have been 10 or more years previous. It is our experience that sperm function improves if repeated ejaculates are produced over a period of time, and this is confirmed by others (Witt et al., 1992; Ohl, 1993). However, Denil et al. (1992) have shown that semen samples produced by TREE can show reduced motility and viability, probably because of the heat effect produced by the electrical current. The disadvantages of using TREE to produce semen samples for SCI patients are that the procedure is costly and it is not without complications — the main ones being the rare occurrence of burns to the rectal mucosa and the occasional, but potentially serious, occurrence of autonomic dysreflexia. In this unit, if the semen samples have been shown to be very poor, then one or more TREE procedures will be carried out in the month or two months preceding an IVF treatment cycle. If samples obtained are of sufficient quality, they are cryopreserved for future use and as an emergency supply if the sample at any future oocyte recovery is particularly poor.

Mallidis et al. (1994) have recommended that all young men suffering SCI should undergo TREE as soon after the injury as they are stable. They hypothesized that normal semen might be obtained in the acute phase of the injury before the semen quality deteriorated. They carried out TREE every 2 days from days 2 to 15 after the injury in a group of seven young men. They found that semen quality was very poor or spermatozoa were absent in the first 6 days after the injury, but between days 6 and 10 samples were within the normal range, before then deteriorating. Five of the seven men had semen samples of sufficient quality to freeze. Facilities to perform this procedure during the immediate post-injury phase are not generally available in most spinal injury units, and
many are concerned by the practicality and ethics of carrying out such procedures on recently injured men. Our experience indicates that early recourse to the use of the more sophisticated treatment methods, such as IVF and, more recently, ICSI, is likely to achieve success for couples sooner than will multiple attempts at simple insemination or even IUI. If semen quality after TREE is consistently good, then up to three or four attempts at IUI may be recommended initially. In the presence of consistently poor semen samples, however, and in common with others (Ohl et al., 1989; Denil et al., 1996; Hulting et al., 1997), we have opted for earlier recourse to IVF, or straight to ICSI in the presence of very poor samples. With this policy in place it has not been necessary to cancel cycles because of very poor quality semen samples.

In conclusion, we have presented data on our experience as a tertiary fertility referral centre over a 5 year period on the management of couples in whom the male partner has suffered SCI with resulting loss of sexual function and fertility. The majority of these couples had attempted simpler fertility treatments before their referral. By employing TREE to obtain semen samples, using the specialized sperm preparation techniques only generally available in units practising assisted conception treatments, and inseminating oocytes in vitro, we have been able to achieve live birth rates of 15.9% per treatment cycle, 20.6% per transfer cycle and 40.0% per couple treated. Our experience is that many couples of whom the male partner has suffered SCI have received little or no advice following recovery from the acute phase of their injury. We believe that all couples in this situation should receive early counselling and advice about their fertility prospects. For young men with SCI and their partners, the effect on their morale of having their own children together is inestimable.

References


Transrectal electroejaculation and IVF

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