



New reproductive technologies: Why are we limiting choices for infertile couples?

Arthur Leader, BA, MD

Infertility affects about 330 000 couples per year in Canada.¹ Male or female infertility cannot be considered in isolation. Absolute female sterility (bilateral tubal obstruction) and male sterility (no sperm) exist in 10% and 6% respectively of infertile couples, whereas subfertility occurs in the remaining 84%.² In about half of couples no obvious male factor is found, but in the other half, some disturbance in male reproductive capability is noted. After a basic assessment (such as semen analyses, determination of midluteal-phase serum progesterone level or endometrial biopsy, hysterosalpingography or laparoscopy-hysteroscopy), couples need to be given realistic information about the chances of a live birth and the risks and costs of expectant management compared with those of any proposed treatment. Some couples with male factor infertility may consider proceeding to in vitro fertilization with intracytoplasmic sperm injection.

The birth of Louise Brown in 1978 raised many concerns around the world. Conceived in a dish, Louise Brown has grown to be a healthy young woman, and her younger sister, who was also conceived in vitro, has given birth this year (after natural conception) to a healthy child. Despite the fears of the day, the more than 250 000 children born as a result of in vitro fertilization have not been stigmatized; they have not shown a higher incidence of developmental problems, and women have not become "obsolete" or lost their right to bear children.³ For women with obstruction or absence of the fallopian tubes, in vitro fertilization has provided a better alternative than tubal surgery, adoption or child-free living. In 1993 the Royal Commission on New Reproductive Technologies agreed.⁴

For men with severe disturbances in spermatogenesis, including azoospermia, the injection of a single spermatozoa into an egg at in vitro fertilization has also provided a better alternative for many couples than adoption or childlessness. As Raimundo Pinheiro and colleagues⁵ point out in this issue (page 1397), the application of in vitro fertilization with intracytoplasmic sperm injection is as useful in cases of severe male-factor infertility as in vitro fertilization is in cases of severe tubal-factor infertility. Since 1992 the Brussels group and others have reported high pregnancy rates with intracytoplasmic sperm injection in cases of severe oligoasthenoteratospermia and obstructive and non-obstructive azoospermia.⁶ Tens of thousands of healthy

children have been born to couples whose previous reproductive choices would have been limited to adoption, insemination with donor sperm or child-free living.

Despite its utility, there is much concern about intracytoplasmic sperm injection. Some potential aberrations in children may be the result of the process itself; alternatively, they may be inherited from the father, or they may arise from maturational disturbances of meiosis or spermatogenesis. Because 10% of men with severe male-factor infertility are believed to have microdeletions on the Y chromosome, we can anticipate that 10% of boys conceived through this method will also have reproductive problems when they choose to have children. Despite these theoretical concerns, intracytoplasmic sperm injection seems remarkably safe. Ongoing studies show a rate of major congenital anomalies similar to that for natural conception (2.3%).⁷ A study to assess the mental and psychological development of children up to the age of 2 years has found no differences between children born through this method of in vitro fertilization and those conceived naturally,⁷ but larger and longer-term studies are required. As a research tool, intracytoplasmic sperm injection has helped us to better understand the processes of fertilization, embryo development and implantation. However, in Canada research funding for bench and clinical research for assisted conception has been dismal, and Canadians have had to rely on research undertaken in other countries to guide their care.

The paradox in the Canadian health care system is that the provinces and the federal government accept that infertility is an illness and spend an average of \$770 per couple to investigate the causes of infertility.¹ The provinces fund the less effective and more costly fertility interventions such as tubal surgery in the woman and varicocele repair in the man, whereas the patient pays for assisted conception such as in vitro fertilization. Only the province of Ontario and the Canadian armed forces pay for in vitro fertilization in cases of female tubal obstruction. Intracytoplasmic sperm injection is not an insured service in Canada. In addition, neither the provincial formularies nor third-party insurers are obliged to cover any or all of the costs of the drugs used to treat any form of infertility. Given the high costs of fertility drugs, in vitro fertilization and intracytoplasmic sperm injection, these treatments are inaccessible



to the majority of the infertile Canadian population. Given the pressing need to address other areas of reproductive health that frequently involve life-threatening conditions (such as maternal nutrition and access to adequate obstetric care), it is likely that the funding of infertility management will remain a relatively low priority on the national health agenda.

Legal efforts to redress this inequity have failed recently in both Nova Scotia⁸ and Ontario.⁹ In both cases, which involved intracytoplasmic sperm injection for obstructive azoospermia or severe oligozoospermia, the infertile patients lost. The suits failed on the grounds that the safety of the procedure had not been proven and therefore the test of medical necessity had not been met. In neither case was the provincial health plan required to prove that the procedure is unsafe.

Twenty-one years ago reasonable people raised unreasonable fears about in vitro fertilization. Today, we are facing similar concerns about more complex treatments such as intracytoplasmic sperm injection. The Royal Commission argued that we should proceed with care, but since 1993 no progress has been made in Canadian public policy to address the legitimate needs of infertile men and women. As a consequence, most infertile Canadians are being denied reproductive choice.

Dr. Leader is the Past President of the Canadian Fertility and

Andrology Society. He is Chief of the Division of Reproductive Medicine, University of Ottawa, Ottawa, Ont.

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Address for correspondence: Dr. Arthur Leader, Suite 510, Civic Parkdale Clinic, Ottawa Hospital, 737 Parkdale Ave., Ottawa ON K1Y 1J8; aleader@ottawahospital.on.ca