

EDITORIAL

Storage of sperm samples from males with azoospermia

An article published in this issue of RBMO by Wang and colleagues at the Shanghai Jiao Tong University School of Medicine (Wang *et al.*, 2018) describes the development of a carrier for small sperm specimens derived from percutaneous testicular aspirates by needling. The carrier is known as Cryoplus and is an adapted device based on the Cryotop®, a popular established carrier for the cryostorage of oocytes, cleaving embryos and blastocysts using vitrification methodology. The advantage of these adapted carriers is that they can hold a larger volume of sperm sample and utilise both sides of the carrier. The main comparisons were with 2 ml cryogenic vials and 0.25 ml straws. There were benefits with respect to sperm cooling times and thawing efficacy compared with the cryogenic vials but no discernable benefits compared with the straws. The study did not include comparison with the Cryotop®, or with any other device for cryopreserving small sperm quantities (e.g. CellSleeper®) but the authors imply that their adapted device offers cost and time benefits.

We are publishing this editorial to accompany the article because the reviewing process proved controversial among the four reviewers, two of whom were satisfied with the article following revision while the other two could not see what real benefits the adapted device has to offer. It appears that those surgeons who treat azoospermia by an open scrotal exploration using

microsurgical epididymal sperm aspiration (MESA) or testicular sperm extraction (TESE) from biopsies are generally satisfied that sperm numbers are high for cases of obstructive azoospermia (OA) (van Wey *et al.*, 2015). Such were the majority of the cases treated in the Shanghai study, where conventional cryopreservation in 0.25 ml straws over liquid nitrogen vapour for 5 minutes is entirely satisfactory in our experience. However, those undergoing closed percutaneous epididymal sperm aspiration (PESA) and percutaneous testicular sperm aspiration (TESA) needling for OA are far more likely to require the Cryotop® or Cryoplus devices given the much lower number of spermatozoa collected. Indeed, only about one third of men with OA who undergo percutaneous aspirations seem to have an adequate number of surplus spermatozoa for freezing with conventional cryogenic vials (Esteves *et al.*, 2013). For those surgeons applying the open micro-TESE technique for non-obstructive azoospermia (NOA) (Esteves, 2013; Flannigan *et al.*, 2017), the number of spermatozoa recovered can be plentiful, but occasionally an extended search is required and only a small number are retrieved. Such cases might well benefit from the Cryoplus device, but this needs to be tested in a definitive study where men with NOA are having open exploratory procedures. Moreover, the new carrier should be compared with similar available alternatives for cryopreservation of sperm samples of low quantity and quality (Endo *et al.*, 2012).

Worldwide, it appears that percutaneous needling procedures are the most common first treatment for azoospermic men within fertility centres. However, this perpetuates the sub-optimal management of the male (Yovich and Keane, 2017) and we would discourage such, particularly for those cases with NOA. If retrieval of spermatozoa fails, such cases may be referred to specialist surgeons for MESA or micro-TESE procedures. These are usually undertaken by a urologist with andrology interest (Esteves, 2015) but in some countries, such as Australia, the open microsurgery technique is often conducted by an appropriately trained fertility gynaecologist. Regardless of who conducts the open MESA or micro-TESE procedure, recovery of spermatozoa is high, good-quality epididymal (or testicular) sperm will invariably be obtained in OA cases, a single operation suffices for numerous subsequent IVF procedures, and the vast majority of samples can be successfully cryopreserved in straws using the established low-cost technique (Miyaoka and Esteves, 2013). Furthermore, higher livebirth rates are reported with sperm from men with OA than from men with NOA (Esteves *et al.*, 2014; van Wey *et al.*, 2015). We would encourage the further testing of this novel Cryoplus device for freezing small quantities of sperm, preferably combined with microsurgical sperm retrieval. In cases of micro-TESE for NOA this should be conducted preferentially using the Schlegel butterfly methodology (Schlegel, 1999).

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