

## Varicocele repair in severe oligozoospermia: A case report of post-operative azoospermia

Marco Milone, Mario Musella, Miguel Emilio Sosa Fernandez, Paola Maietta, Annarita Sasso, Loredana Maria Sosa Fernandez, Laura Virginia Sosa Fernandez, Francesco Milone

Marco Milone, Mario Musella, Paola Maietta, Francesco Milone, Department of Advanced Biomedical Science, University of Naples "Federico II", 80131 Naples, Italy  
Miguel Emilio Sosa Fernandez, Annarita Sasso, Loredana Maria Sosa Fernandez, Laura Virginia Sosa Fernandez, Embryos, IVF Center in Battipaglia, 84100 Salerno, Italy  
Author contributions: Milone M and Musella M contributed to the conception and design; Sosa Fernandez ME contributed to drafting the article and revising it critically for important intellectual content; Maietta P, Sasso A, Sosa Fernandez LM and Sosa Fernandez LV contributed to the acquisition, analysis and interpretation of data; Milone F contributed to the final approval of the version to be published.

Correspondence to: Marco Milone, MD, Department of Advanced Biomedical Science, University of Naples "Federico II", Via Pansini 5, 80131 Naples, Italy. milone.marco@alice.it  
Telephone: +39-81-7463067 Fax: +39-81-7462896  
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### Abstract

Varicocele has been implicated as a cause in 35%-50% of patients with primary infertility and up to 81% of men with secondary infertility. Although a large number of reports have shown improvement in the semen parameters after correction of varicocele, other studies have suggested no benefit. We report the first case of azoospermia after surgery in a young infertile male patient with left-sided varicocele and severe oligozoospermia undergoing laparoscopic varicocelectomy. A pregnancy was only achieved with assisted reproductive technology because semen cryopreservation was performed before surgery. In the light of the above, the deterioration of sperm count after varicocele repair in patients with severe oligozoospermia could be due to irreversible impairment of spermatogenesis of such patients, together with the possible temporary damage of the surgical repair. This possible complication

could therefore turn the severe oligozoospermia into an indication to perform cryopreservation before surgery, on both clinical and medico-legal grounds. Further research is needed before drawing definitive conclusions regarding the management of varicocele-related severe oligozoospermia.

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**Key words:** Varicocele; Fertility; Semen; Cryopreservation; Oligozoospermia

**Core tip:** We report a case of deterioration of sperm count after varicocele repair in a patient with severe oligozoospermia. This possible complication could therefore turn severe oligozoospermia into an indication to perform cryopreservation before surgery, on both clinical and medico-legal grounds.

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### INTRODUCTION

Varicocele has been implicated as a cause in 35%-50% of patients with primary infertility and up to 81% of men with secondary infertility. Numerous studies have shown that varicocele is associated with testicular hypotrophy, impaired spermatogenesis, increased apoptosis of germ cells at the seminiferous tubules, oxidative stress pattern and a progressive damage to testicular biology over time<sup>[1]</sup>. Although a large number of reports have shown

improvement in the semen parameters after correction of varicocele, other studies have suggested no benefit<sup>[2]</sup>.

## CASE REPORT

We reported a case of a 34-year-old infertile male patient with left-sided varicocele. On physical examination, the patient's varicocele was categorized as grade 3 according to a three grade scale (grade 1: detectable during Valsalva maneuver only; grade 2: palpable at rest; grade 3: visible at rest). The reflux during color Doppler ultrasound, classified into three grades (slight and brief reflux, ending before the Valsalva maneuver was completed; lasting throughout the Valsalva maneuver; and severe reflux, already present with the patient supine at rest) was detected as severe with reflux at rest.

A basic infertility evaluation including a detailed history and a complete physical examination was undertaken and the infertility was defined on the basis of a failure to establish a pregnancy within 1 year with unprotected intercourse. No history of smoking, drug abuse or other systemic disease was reported. Hormonal parameters before and after surgery were normal. Semen analysis, conducted according to the World Health Organization recommendations, showed a severe oligozoospermia. The median value of the percentage of progressive motile sperm was 18%, while the median value of the percentage of normal forms was 11%. Nevertheless, the woman was normal, based on history, hormonal levels and hysterosalpingogram.

The surgical approach used was laparoscopic ligation of the spermatic vein. The spermatic cord at the internal ring was identified and then the parietal peritoneum overlying the spermatic cord was incised with scissors. The engorged internal spermatic veins were then identified, dissected, ligated and divided. The venous ligation was performed by a freehand intracorporeal knot-tying technique with 3-0 silk suture. The lymphatic vessels and testicular artery were meticulously identified and preserved. The post-operative course was uneventful and the patient was discharged after 24 h. The patient underwent physical examination 1 mo after surgery and spermatic color Doppler and semen analysis 6 mo after surgery.

The size of the left testis before and after surgery was 3.2 cm and 3.3 cm respectively. Although no complications or recurrence were noted, a deterioration in sperm concentration was recorded and the patient became azoospermic. A pregnancy has only been achieved with assisted reproductive technology because semen cryopreservation was performed before surgery.

The patient underwent another semen analysis 1 year after surgery but it was not necessary to perform a testis biopsy before varicocelectomy.

## DISCUSSION

The Practice Committee of the American Society for Reproductive Medicine recently published recommenda-

tions for the evaluation and treatment of varicoceles<sup>[3,4]</sup>. This report was previously published as a peer-reviewed consensus jointly with the Male Infertility Best Practice Policy Committee of the American Urological Association. The committee concluded that varicocelectomy should be offered to the male partner in couples attempting to conceive only when all of the following conditions were present: a palpable varicocele, documented couple infertility, a female partner with normal fertility or potentially correctable infertility, and a male partner with one or more abnormal semen parameters or test results showing abnormal sperm function.

Concerning the operative technique, data in the literature do not show significant differences in seminal parameter improvements comparing the different surgical, microsurgical or interventional radiological techniques. According to the main international guidelines, currently it is not possible to identify a gold-standard treatment and the most appropriate technique is the one that the surgeon is most confident with or that is the easiest to perform in each hospital setting. Furthermore, it is demonstrated that accidental ligation or injury of the testicular artery during primary varicocele repair has no deleterious effect on post-operative semen and pregnancy outcomes<sup>[5]</sup>. The predictors of varicocele repair outcome are high-grade varicocele, normal serum FSH, total motility > 60% and total motile sperm count >  $5 \times 10^6$  before varicocelectomy. These good prognostic indicators may only help in identifying those men with a better prognosis for varicocelectomy<sup>[6]</sup>. Nevertheless, such predictors cannot be evaluated as a contraindication of performing a varicocelectomy. In fact, in the past 10 years, some studies have shown that also nonobstructive azoospermic patients with varicocele identified on physical examination may benefit from varicocele repair<sup>[7]</sup>.

We reported, to the best of our knowledge, the first case of azoospermia after laparoscopic varicocele repair in a young infertile male patient with left-sided varicocele and severe oligozoospermia.

Few studies have shown deterioration or azoospermia after surgery. Moreover, they do not analyze the characteristics of the patients with semen deterioration or justify this complication<sup>[8,9]</sup>.

In our case, all of the indications to perform varicocelectomy were present and therefore, in such a case, malpractice cannot be a cause of this complication. Moreover, there were no complications with intercourse and no reflux was identified with the echographic evaluation after surgery.

The reason for a deterioration after varicocelectomy is not clear as it is not reported in the literature at all. In the light of the above, the deterioration of sperm count after varicocele repair in patients with severe oligozoospermia could be due to irreversible impairment of spermatogenesis of such patients, together with the possible temporary damage of the surgery repair. This possible complication could therefore turn the severe oligozoospermia

into indications to perform cryopreservation before surgery, on both clinical and medico-legal grounds. Further research is needed before drawing definitive conclusions regarding management of varicocele-related severe oligozoospermia. A randomized clinical trial on these patients with severe oligozoospermia and varicocele would be useful to evaluate the effectiveness of varicocelectomy.

## COMMENTS

### Case characteristics

Young infertile man with varicocele and severe oligozoospermia.

### Clinical diagnosis

Asymptomatic patient.

### Laboratory diagnosis

Semen analysis showed a severe oligozoospermia and the median value of the percentage of progressive motile sperm was 18%, while the median value of the percentage of normal forms was 11%.

### Imaging diagnosis

The reflux during color Doppler ultrasound was detected severe with reflux at rest.

### Treatment

A pregnancy has only been achieved with assisted reproductive technology because semen cryopreservation was performed before surgery.

### Experiences and lessons

In the light of the above, the deterioration of sperm count after varicocele repair in patients with severe oligozoospermia could turn the severe oligozoospermia into an indication to perform cryopreservation before surgery, on both clinical and medico-legal grounds.

### Peer review

The manuscript reported the first case of azoospermia after laparoscopic varicocelectomy in a young infertile patient with left-sided varicocele and severe oligozoospermia, which is contrary to most others that have been published in the literature.

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