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LETTER TO THE EDITOR

Operational Andrology

Subinguinal microsurgical varicocelectomy is safe and effective in a solitary testicle

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Dear Editor,

Varicocele is a common cause of male infertility, but in the course of a diagnostic infertility workup, other underlying problems are often found. Up to two-thirds of patients with nonidiopathic male infertility have at least two possible etiologies.[1] Testicular cancer of the contralateral testis is sometimes one of these etiologies. Hormonal problems must not be overlooked. Microsurgical varicocelectomy, either subinguinal microsurgical varicocelectomy (SMVL) or more invasive inguinal microsurgical varicocelectomy, is considered the gold standard in varicocele treatment.[2,3] This technique, especially using a micro-Doppler probe,[4] allows preservation of the arterial supply of the testis. This is crucial for maintaining and improvement of hormonal and reproductive function. We report a case of SMVL of a solitary testicle after previous contralateral orchidectomy for cancer in the treatment of infertility and low testosterone levels.

A 26-year-old male visited our department with a 3-year history of primary infertility. His wife was 25 years old and had undergone polycystic ovary syndrome (PCOS) treatment. He had undergone right-sided radical orchidectomy for S0T1N0M0 seminoma 2 months previously in another institution. At that time, he was not offered sperm cryopreservation before orchidectomy. Before orchidectomy, his hormonal profile showed low testosterone and borderline follicle-stimulating hormone (FSH) levels (**Table 1**). Two sperm analyses (1 and 4 months before orchidectomy) showed oligospermia (7×10^6 ml^{-1} sperm concentration, 19×10^6 ml^{-1} total sperm count per ejaculate) and asthenoteratozoospermia (total motility: 35%, progressive motility: 28%, and normal anatomy of spermatozoa: 3%), respectively. At this time, the patient was already azoospermic. On a physical examination, a solitary left testicle with a normal volume and grade 3 varicocele were found, as well as a postoperative scar in the right inguinal area. Scrotal ultrasound (US) showed that the left testicle was 43 mm × 23 mm × 19 mm and the pampiniform plexus veins were dilated to 4.1 mm. Two arteries were found with continuous massive back flow (reflux) in color Doppler presentation. The patient underwent left SMVL under general anesthesia with a laryngeal mask. Nine veins in the internal compartment were ligated with 5/0 monofilament nonabsorbable suture and cut. Two testicular arteries were identified. One of these arteries was identified with papaverine solution (**Figure 1a**). The other artery, which was thinner and hidden in a large vein complex, was identified by a US microprobe (**Figure 1b**). The operating time was 50 min. The postoperative course was uneventful. On postoperative day 1, color Doppler ultrasound showed preserved testicular blood flow (**Figure 1c**) and in both testicular arteries (**Figure 1d**). Early follow-up studies that were performed 3 months postoperatively showed a marked rise in the serum testosterone level and improvement of seminal parameters (**Table 1**). Increased FSH levels may have reflected an effect of orchidectomy because hormonal tests were not performed between surgeries.

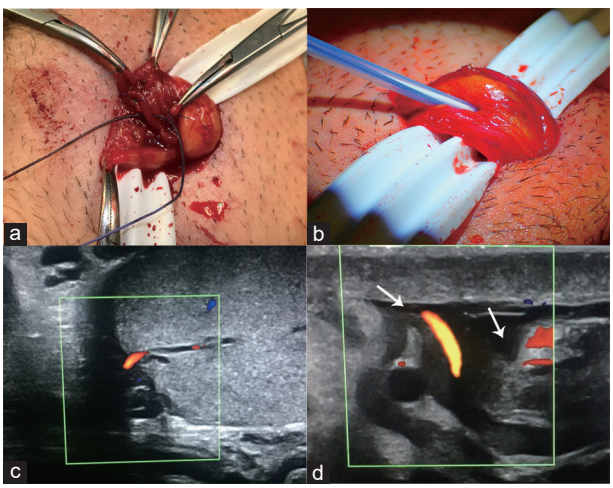

Figure 1: (**a**) Superficially located artery marked with a suture. (**b**) Identification of the other artery with a micro-Doppler US probe. (**c**) Intratesticular arterial and venous blood flow. (**d**) Two arteries are visible at the level of the scrotal portion of the spermatic cord (arrows).

The patient underwent close oncological and andrological follow-up. After improvement from azoospermia to oligoasthenoteratozoospermia (OATZ), he was advised to cryopreserve semen samples for possible future assisted reproduction techniques. The patient had a high estradiol/total testosterone ratio. Therefore, he is currently being treated with an aromatase inhibitor under hormonal control.

Varicocelectomy is believed to not only treat azoospermia in 30%–50% of the patients,[5,6] but also significantly reduce costs and improve outcome of assisted reproduction techniques.[7,8] In conclusion, we suggest that microsurgical varicocelectomy in a solitary testis should be considered as the method of choice for infertility and low

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Table 1: Pre- and postoperative computer-assisted sperm analysis and hormonal results

	TT (ng ml^{-1}), normal range: 1.4–9.2	*LH mIU ml^{-1}), normal range: 1.7–8.6*	*FSH (mIU ml^{-1}), normal range: 1.5–12.4*	*E2 (pg ml^{-1}), normal range: 11–44*	*Sperm concentration 10^6 ml^{-1}*	*Sperm number (10^6)*	*Total sperm motility (%)*	*Progressive sperm motility (%)*	*Ejaculate volume (cc)*
Preorchidectomy	2.77	5.6	11.9	-	7.6/31	19.76/96[a]	80/35[a]	70/28[a]	4/3[a]
Pre-SMVL	-	-	-	-	<4 p/HPF (400×)	-	Few	-	2.6
3 months post-SMVL	4.1	8.01	27.5	145	0.4	0.8	50.0	50.0	2.0

[a]Indicates values from two separate CASAs performed before orchidectomy. CASA: computer-assisted sperm analysis; TT: serum total testosterone; LH: luteinizing hormone; FSH: follicle-stimulating hormone; E2: estradiol; SMVL: subinguinal microscopic varicocelectomy; p/HPF: per high-power field

testosterone levels because full preservation of the arterial supply is crucial.[9,10] This approach may require use of a micro-Doppler probe for identification of all arteries.

AUTHOR CONTRIBUTIONS

PD and LK conceived of the original idea, designed the study, worked the technical details, performed surgical procedure, and wrote the manuscript. KD designed the study and contributed to the final version of the manuscript. PR supervised the project. All authors read and approved the final manuscript.

COMPETING INTERESTS

All authors declared no competing interests.

REFERENCES

1 Adamopoulos DA, Nicopoulou S, Michalakis C, Pappa A, Koukkou E, *et al*. Incidence of dysspermia categories in a contemporary diagnostic setting [Abstract]. *Andrologie* 2006; 16: 319–20.
2 Ding H, Tian J, Du W, Zhang L, Wang H, *et al*. Open non-microsurgical, laparoscopic or open microsurgical varicocelectomy for male infertility: a meta-analysis of randomized controlled trials. *BJU Int* 2012; 110: 1536–42.
3 Cayan S, Shavakhabov S, Kadioglu A. Treatment of palpable varicocele review in infertile men: a meta-analysis to define the best technique. *J Androl* 2009; 30: 33–40.
4 Cocuzza M, Pagani R, Marchini G, Coelho R, Srougi M, *et al*. The systematic use of intraoperative vascular Doppler ultrasound during microsurgical subinguinal varicocelectomy improves precise identification and preservation of testicular blood supply. *Fertil Steril* 2010; 93: 2396–9.
5 Esteves SC, Miyaoka R, Roque M, Agarwal A. Outcome of varicocele repair in men with nonobstructive azoospermia: systematic review and meta-analysis. *Asian J Androl* 2016; 18: 246–53.
6 Kiraç M, Deniz N, Biri H. The effect of microsurgical varicocelectomy on semen parameters in men with non-obstructive azoospermia. *Curr Urol* 2012; 6: 136–40.
7 Cocuzza M, Cocuzza MA, Bragais FM, Agarwal A. The role of varicocele repair in the new era of assisted reproductive technology. *Clinics* 2008; 63: 395–404.
8 Pathak P, Chandrashekar A, Hakky TS, Pastuszak AW. Varicocele management in the era of *in vitro* fertilization/intracytoplasmic sperm injection. *Asian J Androl* 2016; 18: 343–8.
9 Whelan P, Levine L. Effects of varicocelectomy on serum testosterone. *Transl Androl Urol* 2016; 5: 866–76.
10 Bach PV, Najari BB, Goldstein M. Varicocele – A case for early intervention. *F1000 Res* 2016; 5: 1792.