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ORIGINAL ARTICLE

Varicocelectomy: Modified loupe-assisted versus microscopic technique – A prospective comparative study

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KEYWORDS

Loupe-assisted;
Microscopic;
Varicocelectomy;
Guidelines;
Tourniquet

ABBREVIATIONS

LV, loupe-assisted varicocelectomy;
MV, microscopic varicocelectomy

Abstract ***Abstract objective:*** To compare our novel loupe-assisted varicocelectomy (LV) technique to the 'gold standard' demanding microscopic varicocelectomy (MV) technique for the management of varicoceles.

Patient and methods: Our LV technique, featuring testicular delivery and proximal spermatic cord occlusion using a tourniquet, has not been used before nor to our knowledge has it been reported in the literature. In the LV group, inguinal incision was done prior to testicular delivery and spermatic cord occlusion. Pampiniform and gubernacular veins were identified then tackled. Proximal spermatic cord occlusion helped in identifying those veins, and not confusing them with other cord structures that should be preserved. In all, 95 infertile men were included in this prospective, comparative study; and divided into LV and MV groups. They were followed-up for 1 year, pregnancy achievement, improvements in semen parameters, and complication rates were assessed.

Results: Both groups had statistically significant pregnancy rates and negligible complication rates. However, LV cost 33% less than MV and was quicker to perform. We did not find that the MV technique was better than our simple, more cost-effective, less time-consuming LV technique.

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Conclusion: Our novel LV technique has similar success and complication rates as the 'gold standard' MV technique for the management of varicoceles, and is more cost-effective and less time consuming.

Introduction

Varicocelectomy is a common procedure used in urology, as it is indicated for varicocele-associated infertility, varicocele-associated hypogonadism, decreased testicular size, and persistent pain. Varicoceles are present in ~15% of normal males and in 40% of males with infertility [1,2].

Different varicocelectomy techniques are used by urologists, including inguinal, subinguinal, retroperitoneal, laparoscopic, angiographic, loupe-assisted (LV) and microscopic varicocelectomy (MV). No structured guidelines have been developed to indicate which technique is better for the management of varicoceles [1]. However, MV has been reported as the ideal technique by many studies, as there are fewer postoperative complications and lower recurrence rates associated with this procedure [3–5]. There are only a few studies available on LV, and to our knowledge, this is the first study that has been conducted on the use of LV to treat infertility using a surgical loupe with testicular delivery and occlusion of the spermatic cord proximally. Moreover, this is the first investigation to compare our LV to the MV technique.

The present study was conducted to compare our LV technique to the MV technique. The MV technique requires microsurgical skills that extend beyond the residency level and a particular operative setup, whilst the LV technique can be performed in any operating room and by less experienced surgeons.

Patients and methods

In all, 95 patients were included in this prospective, non-randomised, comparative study, of which 43 (45%) underwent LV and 52 (55%) underwent MV. The study sample was recruited between January 2011 and July 2014 from the co-author's private clinic; each case had a minimum history of infertility for 1 year (primary or secondary), and they presented with left-sided palpable varicoceles, which were either associated with the presence or absence of pain and abnormal semen parameters. Two semen analyses were performed before the procedure and 3 months after the procedure; the patients were all followed-up for 1 year postoperatively, monitoring for complications, semen parameters, and conception.

Patients were offered both options with an explanation of the advantages and limitations of each (including the associated costs), and the patients themselves made the final decision as to which technique they wished to undergo. All of the patients in this study signed written informed-consent forms. The study was approved by the local research ethics committee.

Procedures

For the LV technique, a surgical loupe (42 cm/16″; Keeler Ltd, West Berkshire, UK) with a magnification of ×2.5 was used to perform an inguinal varicocelectomy with testicular delivery, as well as occlusion of the spermatic cord at the level of the internal ring using a tourniquet. In addition to ligation and division of the pampiniform plexus in the standard technique, the gubernacular veins were also identified and tackled, as in Goldstein's technique [6]. The tourniquet use facilitated vein recognition, enabling us to differentiate between veins, arteries, and lymphatics, thus sparing the latter two structures.

The second group of patients underwent a subinguinal MV using a surgical microscope (Marmar technique [7]) with a magnification of ×20 (VARIO 700; Carl Zeiss Meditec AG, Jena, Germany). Spermatic and gubernacular veins were ligated and divided, and the artery and lymphatics were identified and spared. Ligation with or without division of varicocele veins was done for both groups. Individuals in both groups were operated on by the same surgeon. Intraoperative Doppler ultrasonography was not used. The operative time calculated started after spermatic cord isolation, and ended after veins ligation.

Statistical analysis

For univariable analysis, continuous variables were presented as the mean (SD), whilst categorical variables were presented as frequency and percentage. For bivariable analysis, the Student's *t*-test was used for statistical analysis of the normally distributed continuous variables in both groups. Chi-square and Fisher's exact tests were used for comparison between categorical variables in both groups. A $P < 0.05$ was considered as statistically significant. Data were stored and analysed by the use of the Statistical Package for the Social Sciences (SPSS®, Chicago, IL, USA) version 20.