No Scalpel Vasectomy (NSV) with Ligation and Excision: A Single Centre Experience

K. Bhuyan · I. Ali · G. Sarma · U. Das

Received: 27 September 2013 / Accepted: 26 May 2014 / Published online: 8 June 2014
© Association of Surgeons of India 2014

Abstract No scalpel vasectomy (NSV) has proved to be a safe and simple procedure for permanent sterilization for men. Ligation and excision of the vas deferens followed by fascial interposition is the procedure of choice. It is believed that vas excision without fascial interposition has a risk of failure. The objective of this study was to evaluate the technique of NSV with ligation and excision only. No scalpel vasectomy performed in an urban centre was taken for this prospective study. Only ligation and excision procedure was applied in its execution. It was demonstrated and performed under the supervision of an expert. Information regarding early and late complications including failure was gathered. A total number of 3,392 NSVs were performed in an urban training centre between Apr' 2009 to Mar' 2013. The procedure applied was only excision and ligation of the vas deferens. The fascial interposition was not included in the procedure. Haematoma (1), bleeding (3), foreign body granuloma (1), scrotal pain (3), epididymitis (1) and sinus formations (1) were encountered. There was only one failure in the whole group of acceptors. NSV with ligation and excision is a simple and easy procedure to learn and perform. Complications and failures are

negligible. The additional fascial interposition needs more surgical skill and is time-consuming, hence can be avoided where a large number of acceptors need to undergo NSV in a rural camp.

Keywords Vasectomy · NSV · Ligation · Excision · Complication

Introduction

No scalpel vasectomy (NSV) provides a simple and safe method of male sterilization. The vas deferens is delivered with a small puncture in the scrotal skin followed by ligation and excision. This is completed by covering of the prostatic cut end by the fascial sheet of the vas in order to prevent spontaneous recanalisation. This additional procedure of fascial interposition requires more surgical skill and is time-consuming. The objective of this study was to evaluate the result of NSV with ligation and excision performed without fascial interposition.

Methods

A total number of 3,392 male accepted NSV as a method of permanent contraception in an urban family welfare hospital Assam, from Apr' 2009 to Mar' 2013. NSVs were performed by following the procedure described by Dr. Li Shanquiang [1]. 'Dr. Li's three finger technique' was followed in its execution. The vas deferens is ligated and excised after delivering it through a punctured wound near the median raphe at mid scrotum. The added procedure of fascial interposition of the prostatic cut end of the vas was not included [1–3]. About 2–3 cm of the vas segment was excised. Silk suture 2–0 in size was used in all the cases. The procedure was demonstrated and

K. Bhuyan (✉) · I. Ali
Gauhati Medical College & Hospital, Guwahati, Assam, India
e-mail: kanakbhuyan@sify.com

K. Bhuyan
e-mail: kanakbhuyan@gmail.com

I. Ali
e-mail: drilias.ali@gmail.com

G. Sarma · U. Das
Maternity & Child Welfare Hospital, Guwahati 781038, India

G. Sarma
e-mail: dhirenpara.chc@gmail.com

U. Das
e-mail: ubonti@rediffmail.com

performed under the supervision of an expert (Figs. 1 and 2). Doctors working in peripheral hospital were trained hands on in this simple procedure. After demonstration by the expert trainee, doctors were allowed to perform at least 10 NSVs with the procedure under supervision. A number of 85 doctors were trained during the period. The acceptors were advised to take rest for 24 h, to use tight underwears for 48 h and to avoid heavy weight lifting and cycling for at least 5 days. They were counselled for use of temporary methods of contraception without fail for 3 months and to undergo semen analysis after the period. All the acceptors were given 21 pieces of condoms. They were specifically advised to report unwanted pregnancy immediately. Complications encountered during and after surgery were recorded. The acceptors were followed up to 3 months post vasectomy and assessed the satisfactory level including failures.

Results

A total number of 3,392 NSVs with LE only performed from Apr' 2009 to Mar' 2013 were included in the study. The total number of complications was 11 with an overall rate of 0.32 % (95 % confidence interval 0.17–0.56). There were haematoma (1), bleeding (3), foreign body granuloma (1), scrotal pain (3), epididymitis (1) and sinus formation (1) (Table 1). The cases with bleeding were observed in the hospital for 24 h, other cases were managed conservatively.

There was only one failure in the whole group of acceptors. This person did not come for semen analysis.

Discussion

The NSV has few complications and is less painful [2]. A Cochran review of two randomised controlled trials showed

Fig. 2 Excision of the segment of the vas deferens

less bleeding and pain in NSV [4]. Infection and haematoma were found to be the commonest complications in various studies [5, 6]. There were haematoma (1, 0.03 %; 95 % confidence interval (CI) 0.2–0.4), bleeding (3, 0.09 %; 95 % CI 0.9–0.6), FB granuloma (1, 0.03 %; 95 % CI 0.2–0.4), scrotal pain (3, 0.09 %; 95 % CI 0.9–0.6), epididymitis (1, 0.03 %; 95 % CI 0.2–0.4) and sinus formation (1, 0.03 %; 95 % CI 0.2–0.4) in this study (Table 1) with overall complications of 0.32 % (95 % CI 0.17–0.56). In a large study, there were reports of haematoma, infection, painful sperm granulomas, epididymitis and sexual dysfunction with less than 2 % complications [2]. There was one vasectomy failure (0.03 %; 95 % CI (0.2–0.4) in this study. These vasectomies were performed by doctors working in rural areas and most of them without formal post graduate training. They had technical problems in learning and executing the fascial interposition. The ligation and excision was found to be simple to train and easier to execute. The fascial interposition needed more surgical skill and was time-consuming. The fascial interposition is not mandatory (optional) in India, and most surgeons perform NSV with ligation and excision only [7, 8]. In a mobile camp where a large number of vasectomies were performed, the fascial interposition component has been avoided in order to save time. There was no statistical differences in terms of complications, operative time and failure rate in NSV performed with fascial interposition or ligation and excision only [9, 10], although in one study, the failure rate in ligation and excision group was found to be high [11]. Excising a large

Fig. 1 Delivery and ligation of vas deferens before excision

Table 1 Complications observed in NSV with Ligation and Excision only

Complications	Numbers	Percentage (95% CI)
1. Bleeding	3	0.09 (0.9–0.6)
2. Haematoma	1	0.03 (0.2–0.4)
3. Scrotal pain	3	0.09 (0.9–0.6)
4. Epididymitis	1	0.03 (0.2–0.4)
5. FB granuloma	1	0.03 (0.2–0.4)
6. Sinus formation	1	0.03 (0.2–0.4)
7. Vasectomy failure	1	0.03 (0.2–0.4)
Total	11	0.32. (0.17–0.56)

segment (4 cm) of the vas deferens reduces the rate of failure but increases the chance of complications [12]. In the present study, about 2–3 cm of the segment of the vas was excised, and nonabsorbable 2–0 silk suture was used for ligation. The use of thin suture (3–0 silk) increases the chance of failure as it may cut through the vas [7]. A cohort study in Nepal of 664 vasectomies using ligation and excision only needed repeat vasectomy in 1.6 % cases after semen analysis. Similarly, an Indian study showed 1.2 % failure in 258 vasectomies with ligation and excision [7]. The complications stated to be rare according to the same study. In a study of 649 NSV performed with ligation and excision only in rural camps in Assam, a complication rate of 1.69 % was found [13]. It is difficult to determine the failures early as not all acceptors come for post vasectomy semen analysis [14, 15]. The acceptors along with partners should be well counselled about the use of temporary contraception at least for 3 months.

All these vasectomies in this study were performed in an urban health care providing centre. Doctors working in a peripheral hospital were trained in the centre. It was observed that the trainees found technical difficulty in the execution of fascial interposition. To perform fascial interposition, it needs additional time of 2–4 min even to the expert [7]. The trainee doctors found it easier to perform this simple procedure of NSV with ligation and excision.

Conclusions

The NSV with ligation and excision is easy to learn and execute with negligible complications including failure. Doctors from peripheral hospitals can be trained effectively. It is effective, time saving and can be performed easily in rural camps where a large numbers of vasectomies are to be dealt with.

References

1. Li S, Marc G, Zhu J, Huber D (1991) The no scalpel vasectomy. *J Urol* 145:341–344
2. Liu X, Li S (1993) Vasal sterilization in China. *Contraception* 48: 255–265
3. Elvy M (2003) The No Scalpel Vasectomy (NSV) office-based Procedure: A review of 190 vasectomies in rural procedural general practice: *GP Research* 1:1–4.
4. Cook LA, Pun A, Gallo MF, Lopez LM, Van Vliet HAAM (2007) Scalpel versus no scalpel incision for vasectomy. *Cochrane Data Syst Rev Issue 2:Art No.CD004112* doi:[10.1002/14651858.CD004112](https://doi.org/10.1002/14651858.CD004112) pub3
5. Pant PR, Sharma J, Subba S (2007) Scrotal haematoma the most common complication of no scalpel vasectomy. *Kathmandu Univ Med J (KUMJ)* 5:279–280
6. Alderman PM, Morrison GE (1999) Standard incision or no scalpel vasectomy. *J Fam Pract* 48:718–721
7. Michel Labrecque, John Pile, and David Sokal, RCM Kaza et al (2005) Vasectomy surgical techniques in south and East Asia; *BMC Urology* 5:10 doi: [10.1186/1471-2490-5-10](https://doi.org/10.1186/1471-2490-5-10)
8. Standard for female and male sterilization (1999) New Delhi, India, Ministry of Health and FW:1–51.
9. Shakeri S, Aminsharifi AR (2009) Khalafi: fascial interposition technique for vasectomy: is it justified? Dep't of Urology. Shiraz University of Medical Sciences, Shiraz, PMID: 19440029
10. Rhodes DB, Mumford SD (1980) Vasectomy: efficacy of placing the cut vas in different fascial planes. *Fertil Steril* 33(4):433–8
11. David C (2003) Sokal: recent research on vasectomy techniques. *Asian J Androl* 5:227–230
12. David C (2009) Sokal, Michel labrecque effectiveness of vasectomy techniques. *Urol Clin N Am* 36:317–329. doi:[10.1016/j.ucl.2009.05.008](https://doi.org/10.1016/j.ucl.2009.05.008)
13. Bhuyan K, Ali I, Baruah SJ (2012) Role of NSV in male sterilization. *Indian JSurg* 74(4):284–287
14. Sivardeen KA, Budhoo M (2001) Post vasectomy analysis: call for a uniform evidence-based protocol. *Ann R Coll Surg Engl* 83(3):177–9
15. Lesko SE, Griswold KS, Westfall JM (2013) Response: Re: journal of the American board of family medicine issue on communities of solution. *J Am Board Fam Med* 26:613–614