Role of No Scalpel Vasectomy in Male Sterilization

K. Bhuyan · Ilias Ali · S. J. Barua

Received: 26 September 2010 / Accepted: 21 December 2011 / Published online: 21 January 2012
© Association of Surgeons of India 2012

Abstract No Scalpel Vasectomy (NSV) is a modern method of delivery, ligation and excision of vas deference without use of a knife. It provides a permanent sterilization option for male. It is a safe, effective method of vasectomy with low complication and greater patient compliance. To evaluate effectiveness and its acceptance of the procedure data were collected on men who accepted NSV between Jan'2008 to Mar'09. Demographic information, motivating factors, educational status and surgical complications were recorded. The cases were done in rural hospitals & Primary health centers as camp procedure. A total of 649 vasectomies performed using NSV method from Jan'08 to Mar'09. The mean age of the acceptors was 35 years with 4 numbers of children on average. Complications included bleeding during surgery in 4 cases (0.6%), haematoma in one case (0.2%), and superficial wound infection occurred in two cases (0.3%) and scrotal pain in 4 cases (0.6%). NSV is an effective, minimal access method of vas delivery, ligation and excision. It provides safe and effective contraceptive option to male population with minimal complications. Doctors, health workers along with the simplicity of procedure and early return to work are great motivating factors. It is easily performed as camp procedure in a simple medical setup. Doctors can be effectively trained hands on during the camp procedure.

Keywords Male sterilization · NSV

Introduction

India adopted family planning (FP) program as a national policy in 1952. Vasectomy was introduced for male permanent sterilization. However due to various socio-cultural-religious reasons and faulty approach, male participation in the FP program has not been satisfactory. No-scalpel vasectomy (NSV) is a modern method of permanent sterilization for males. This method removes the fears of incisional pain as no knife is used as in conventional vasectomy and also fear of loss of libido. This method was first developed by Dr. Li Shunqiang of China in 1974 to improve the acceptance of vasectomy as a permanent contraceptive choice. Over 10 million Chinese men have undergone vasectomy by this method [1]. It was introduced in the USA in 1986 and in India in 1998. This method is offered to men who have completed their family, on voluntary basis under national family welfare program [1–3] in collaboration with the United Nations Population Fund (UNFPA). The NSV is now a standard method around the world [1, 4, 5]. It can be performed in rural hospitals and primary health centers (PHCs) as camp procedure. Doctors working in hospitals and nearby areas can be imparted hands-on training during the camp. Widespread publicity is required to remove the social, religious, health, and sexual misconceptions for this simple method to have a greater acceptance. It is a safe, effective minimal access method of vasectomy with low complication and greater patient compliance.

Materials and Methods

The NSVs performed in rural hospitals/PHCs in 16 different districts of Assam as camp procedure from January 2008 to March 2009 were included in the study. Data were collected

K. Bhuyan (✉) · I. Ali · S. J. Barua
Gauhati Medical College,
Guwahati 781032 Assam, India
e-mail: kanakbhuyan@sify.com

from each acceptor on demographic characteristics, motivating factors, source of information about the procedure, and educational status. Complications were recorded during and after surgery. They were followed up at 3 months and at 6 months for late complications and to assess the effectiveness of the procedure. Doctors working in the area were imparted hands-on training during camp procedure.

Prior to the procedure the clients were given comprehensive information outlining the procedure—its aftercare and possible complications. History of concomitant diseases such as diabetes mellitus (DM), hypertensive heart disease, any known allergy to drugs, family history of blood disorders were taken. All the clients were checked for blood pressure and urine for sugar. Scrotum examination was performed to exclude skin infection, hydrocele, varicocele, cryptorchism, and scrotal mass or any previous scrotal injury or operation. Clients with hypertension, DM, and abnormal scrotal conditions, with or without blood disorder were excluded.

“Dr. Li’s three-finger technique” [6–8] was applied to perform the NSV. This has been a minimal access version of conventional vasectomy. The vas is identified and fixed between the thumb, middle, and index fingers in the midline of the scrotum at the midpoint between the root of the penis and tip of the testes. Local anesthesia (2% xylocaine without adrenaline) is infiltrated into the scrotal skin overlying the vas followed by perivascular infiltration. The vas was then grasped with the special extracutaneous vas-holding forceps followed by puncture of scrotal skin and fascial sheath of vas with the pointed dissecting forceps. The vas was isolated and delivered using the same instrument through the punctured area followed by ligation and excision of 2–3 cm of vas deference. The procedure was repeated for the remaining vas using the same skin puncture. The punctured area was sealed with the medicated adhesive tape. The extracutaneous vas-

Table 1 Complications observed in the NSL

Complications	N	%
Bleeding	4	0.6
Hematoma	1	0.2
Scrotal pain	4	0.6
Wound infection	2	0.3
Total	649	1.69

The total number of NSV is 649.

holding forceps and vas-dissecting forceps were specially designed by Dr. Li Shunquang [4].

Following the procedure, the clients were advised to take rest for 24 h, avoid cycling for 7 days, wear tight underwears for 48 h, use temporary contraceptive methods by either of the partners during intercourse for 3 months or at least for 20 ejaculations, and report for analysis of semen after 3 months.

All the clients were given preoperative injectable antibiotics, tetanus toxoid, and an analgesic.

Results A total of 649 males who opted for NSV from January 2008 to March 2009 were included in the study. The mean age was 35 years. Only 35% of acceptors in the study were literate. The number of children were 4 (3.8) on an average. The reasons for accepting the procedure were completion of family, the simplicity of the procedure, and early return to work. Most of them (90%) got the information from the accredited subsidiary health assistant (ASHA) workers in their areas and were motivated to undergo the procedure after attending public meetings addressed by doctors and social personalities. Complications included bleeding during surgery in four cases (0.6%), hematoma (Fig. 1) in one case (0.2%), superficial wound infection in two cases (0.3%), and scrotal pain in four cases (0.6%) reported within first week (Table 1). None of the patients

Fig. 1 Haematoma following NSV

Fig. 2 Following 3 days conservative treatment

came for semen analysis. No client reported for failure during follow-up period. It is found that the learning curve for the NSV procedure is high, requires 10–15 operations before being able to perform the procedure perfectly. The client with complication of hematoma required hospitalization and it was managed conservatively (Fig. 2).

Discussion

The national family welfare program was launched in 1952. Vasectomy was introduced as a method of permanent sterilization for males. However the acceptability of this conventional method has since declined and it now constitutes 1.9% of all acceptors of modern contraceptive methods, the main deterrent being the fear of pain, loss of libido, and other complications [3].

The mean age of the acceptors was 35 years in this series, which is similar to earlier studies [3, 7, 9]. On an average each had four (3.8) children, which was higher than the national average (2.08) [3]. Only 35% of acceptors in this study were literate. The low educational level was significant, which attributed to large numbers of children in a family. In an earlier study, it was observed that higher the education level lower the number of children in a family and higher the rate of acceptance of FP measures [3]. In one study of 124 NSV acceptors, it was found that 46% had studied up to high school [9]. ASHA workers were the main factor for spreading the message to interior places. Public meetings addressed by doctors and prominent social personalities motivated most of them to accept the procedure. Thus, public health nurses in NSV clinic in PHCs, social workers, and doctors play a vital role in motivation [9]. There was equal acceptability among all communities in this study. Hindus constituted 52% and Muslims 48%. In one study, Hindus constituted 95% of the acceptors [9].

There are a few complications and less pain in NSV than in the conventional method [6]. Complications include wound infection, sperm granuloma, scrotal hematoma, late recanalization. Infections (0–0.91%) and hematoma (0–2.2%) were the most reported complications in various studies [10]. In this study, the overall rate of complication is 1.69% (Table 1). Bleeding occurred during surgery in four cases (0.6%), hematoma in one case in next 24 h of surgery (0.2%), superficial wound infection in two cases (0.3%), and scrotal pain in four cases within first week (0.6%). None of the clients came for semen analysis. There was no report of failure as well. In a large comprehensive survey of 1,79,741 NSVs, there were reports of less than 2% complications, which included hematomas, infection, and painful sperm granulomas, epididymitis, and sexual

dysfunction [6]. There were complications of hematoma (0.7%), infections (1.6%), epididymitis (5.1%), and granuloma (2.2%) in a series of 666 NSVs [11]. A series of 619 NSVs showed 0.6% infection and hematomas in 0.3% of cases [2]. There were 0.53% of hematomas, 0.43% infections, and 0.32% scrotal sinus in another study [10]. Cochrane review of two randomized controlled trials showed less bleeding and pain in NSV than in conventional vasectomy [12]. There were less postoperative scrotal pain and infection in the NSV group. Satisfactory results can be obtained by good surgical technique and liberal use of antimicrobials [13].

All the NSVs in this study were performed in rural hospitals as camp procedure. Doctors working in the center were imparted hands-on training using the Li technique. It was found that the learning curve was high. The most difficult part was the fixation and isolation of vas deferens [8, 11]. To acquire necessary skills, about 10–15 operations were needed for each doctor, which was similar to an earlier study [14].

Conclusion

NSV is an easy, safe, and effective method of male permanent sterilization. It is cost-effective and complications are low. There is less pain and the acceptors can resume normal activities in 48 h. This can be performed in rural hospitals as camp procedure. Medical officers in both urban and rural areas can be effectively trained in this technique in training camps, making it accessible and available to all. India, which is fighting population monster, needs this technique to be popularized among males. ASHA workers in rural health establishments can effectively motivate rural population to limit the family size and accept this simple method of contraception. Doctors' participation in public awareness programs increases its acceptance among the general population.

References

1. Xiaozhang L (2009) Scalpel versus no scalpel incision for vasectomy. RHL commentary. The WHO Reproductive Health Library, WHO, Geneva
2. Alderman PM, Morrison GE (1999) Standard incision or no scalpel vasectomy. *J Fam Pract* 48:719–721
3. Rajoura OP, Meena GS, Kaza RCM, Bhasin SK (2003) Acceptability of no scalpel vasectomy at a male family welfare centre in Delhi. *J Fam Med* 49(2):10–13
4. No scalpel vasectomy (2003) An illustrated guide for surgeons, third edition, Roy Jacobstein New York Engender Health (www.engenderhealth.org)
5. Family planning: a global handbook for providers. Baltimore and Geneva (2007): World Health Organization and Johns Hopkins

- Bloomberg School of Public Health/Center for Communication Programs (CCP), INFO Project
6. Liu X, Li S (1993) Vasal sterilization in China. *Contraception* 48:255–265
 7. Elvy M (2003) The no scalpel vasectomy (NSV) office-based procedure: review of 190 vasectomies in rural procedural general practice. *GP Research* 1:1–4
 8. Shunqiang Li, Marc G, Zhu J, Huber D (1991) The no scalpel vasectomy. *J Urol* 145:341–344
 9. Khokar A, Sachdeva TRS, Talwar R, Shing S, Rasonia SK (2005) Determinants of acceptance of no scalpel vasectomy among men attending NSV clinic in a public sector hospital of Delhi: Health and Population perspective *Issues* 28:197–204
 10. Pant PR, Sharma J, Subba S (2007) Scrotal haematoma: the most common complication of no-scalpel vasectomy. *Kathmandu Univ Med J* 5:279–280
 11. Macdonald IR, Page AS (2002) No-scalpel vasectomy as performed by a general practitioner/surgeon between 1990 and 1999. *Can JRM* 7:30–33
 12. 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.pub3](https://doi.org/10.1002/14651858.CD004112.pub3)
 13. Alderman PM (1991) Complications in a series of 1224 vasectomies. *J Fam Pract* 33:579–584
 14. Harvaid TB, Miskowiak Ugeskr Laeger (1994) 156:2383–2385